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AN INTRODUCTION  
TO MONETARY THEORY



# AN INTRODUCTION TO MONETARY THEORY

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AN INTRODUCTION TO MONETARY THEORY

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## PREFACE

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This book was planned and written as a result of its author's inability to find reading materials suitable for use by undergraduate students of money and banking. Though many available texts in this general field contain acceptable discussions of the history, structure, mechanics, law, and statistics of monetary and banking systems, they are less satisfying in their treatment of what the writer believes should be the very heart of a money and banking course—the relations between money and economic activity and welfare, or what is usually called monetary theory. Most textbook treatments of monetary theory suffer from one or more of several shortcomings. They are too brief to deal with the subject adequately, they present theories as sets of conclusions rather than as tools of analysis, or at best they subjugate analysis to conclusions, and they exaggerate the conflicts among the various types of theory, failing to show that many of the apparent disagreements are merely differences in terminology, approach, or emphasis and that more often than not the different theories recognize the same basic determinants and arrive at much the same conclusions. The more advanced writings on monetary theory now available in scholarly books and in the learned economic journals are equally unsuited for use by the student just entering this field, though for different reasons. Most of these treatments assume more knowledge of monetary and banking systems and of the basic principles of monetary theory than is possessed by the beginner and are therefore largely unintelligible to him, their terminology is very

technical, they are highly controversial in nature, passing over quickly the broad areas of agreement and dwelling at length on points of dispute, and even if they were otherwise adapted to the use of beginners they would still be so widely scattered in books and journals as to make their coordination and integration difficult and their cost prohibitive. Valuable as these writings are in enabling economists to make available to each other the results of their researches and in clarifying and eventually resolving conflicts, they cannot be used successfully by the uninitiated.

This book attempts to chart a middle course between the inadequacy of the ordinary textbook discussion and the excessive difficulty, from the beginner's point of view, of the more advanced and controversial treatments. Assuming only a knowledge of elementary economic theory and of the basic mechanics and functioning of monetary and banking systems, it attempts to present the essential principles of the leading types of modern monetary theory and to indicate briefly how and to what extent these theories can be reconciled and integrated. It is not a history of monetary theory, and it makes no attempt to review the theories advanced by particular economists. Instead, it classifies the individual theories into general types and then presents what the writer believes to be the most valid form of each general type of theory. This plan has necessitated emphasizing areas of agreement rather than points of controversy. Such a procedure obviously suppresses many provocative arguments, but it is to be defended on the ground that a knowledge of accepted basic principles is necessary before the significance of controversies can be appreciated. And this book, as its name indicates, does not pretend to be more than an introduction to monetary theory. For those who wish to pursue further their study of this subject, the appendix presents a selected list of

supplementary and more advanced readings paralleling each chapter

As was indicated above, this book is designed primarily for the use of the student who has already been at least introduced to elementary economic theory and who knows something of the mechanics and operation of monetary and banking systems. It is expected to find its greatest use, therefore, toward the end of the student's first course in money and banking or in a second course in this field. Its author hopes, however, that it will also prove useful to students of business cycles who do not have the necessary background of monetary theory and to graduate students who will use it to review the basic principles of monetary theory and to secure a foundation and perspective for the study of more advanced and controversial materials.

The author wishes to thank a number of his friends for their generous assistance in the preparation of this book. Charles R. Whittlesey, Karl R. Bopp, Arthur D. Gayer, Charles W. Cole, Nelson H. Eddy, Isaiah Finkelstein, John Good, and Ralph Bowen read the manuscript at various stages of its development and made suggestions that led to the elimination of many of its imperfections. The author must assume full responsibility, however, for the shortcomings that remain.



AN INTRODUCTION  
TO MONETARY THEORY



## CHAPTER I

# MONEY AND THE ECONOMIC PROCESS

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### INTRODUCTION

No extended argument is required to convince members of modern economic systems that money is a widely used economic instrument. Virtually everyone employs it daily in his business and personal transactions and uses it as a unit for evaluation and accounting. It can hardly be said, however, that this constant association with money has bred a deep understanding of it. It still remains one of the least widely understood of the commonly used economic implements. What is the fundamental purpose of money? Why is it used in every economic system that has passed the stage of family self-sufficiency? How satisfactorily has it performed its functions? To what types of disorders is it subject? What economic ills are attributable to monetary disorders? To what extent can economic problems be solved by a deliberate control of money? What are the consequences of inflationary and deflationary monetary policies? These are some of the important questions that are asked about money and that this and the following chapters will discuss.

### THE FUNDAMENTAL PURPOSE OF MONEY, TO FACILITATE EXCHANGE

Money is useful because economic units are not self-sufficient, but are interdependent. The prevailing organization of production is based upon the principle of specialization—specialization of persons, of business firms, and of regions. It is largely to

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this system of complex specialization and to the enhanced knowledge of production methods with which it is so intricately interrelated that the vastly superior productivity of modern economic systems must be attributed. But such a system must of necessity be an exchange economy. No person will devote his time and effort to the production of a commodity or service that does not satisfy his own desires unless he can trade it for desirable articles produced by others. The superiority of specialization as a production technique is a prerequisite for an exchange economy, but the degree of specialization that is feasible depends to a considerable extent upon the ease of making exchanges.

Some exchange could be effected, of course, by the process of barter—the direct exchange of economic goods, one for another. A certain amount of trade is still carried on in this way. But the shortcomings of barter are so great that exchange, and therefore specialization, could never have approached its present state of development if only this method had been available.

**The Specific Functions of Money**—It is precisely because of the disadvantages of barter that exchange economies become money economies very early in their development. Money is sterile in that by itself it can produce nothing useful, but it has a very high indirect productivity owing to its ability to facilitate exchange and specialization. Money performs its one fundamental function as “the great wheel of circulation, the great instrument of commerce” by performing two specific primary functions. In the first place, it serves as a unit of account or common measure of value. Just as the use of a unit of linear measurement—such as a yard, a foot, or an inch—enables us to measure length in quantitative terms, the use of a monetary unit enables us to measure in quantitative terms the values of economic goods. In a money economy it is a simple matter

to ascertain the relative exchange values of goods by comparing their market prices in terms of monetary units. It is equally easy to add and subtract the values of goods for accounting purposes. In the second place, money facilitates trade by serving as a medium of exchange, that is, as an article that is generally accepted in payment. In a money economy the owner of a good or service that he wishes to trade need not expend time and effort in searching for someone who has the desired good and who also is willing to take the good offered, he sells his article for money, which will be accepted in payment for goods by almost anyone. And the fact that he wishes to exchange one valuable article for numerous inexpensive ones need cause no difficulty if money is divided into the proper denominations.

In addition to discharging its two primary functions of serving as a unit of account and as a medium of exchange, money performs the two derivative or subsidiary functions of serving as a standard of deferred payments and as a store of value.

It serves as a standard of deferred payments when obligations to make future payments are stated in terms of it. These obligations have their origins in two general types of transactions. The first is that in which one contracting party agrees to deliver fixed amounts of goods, services, or securities at some future time in exchange for an agreed-upon sum of money to be paid in the future. Here are included long-term contracts for labor, commodities, and the use of physical property. The second type of transaction giving rise to the use of money as a standard of deferred payments includes credit (or debt) transactions, in which the creditor parts with things of value at one time in return for which the debtor promises to repay money at some future date. The volume of debt outstanding and evidenced by personal promissory notes and bills of exchange, mortgages, and corporation and government bonds runs into

hundreds of billions of dollars It is partly because of the existence of this tremendous volume of obligations stated in monetary terms that changes in the value of money are of such great consequence

Money may also be used as a store of value, though this is a power which it shares with virtually all other economic goods, and especially with durable goods A receiver of money may spend it immediately, or he may hold it for days, months, or even years before passing it along This is unquestionably convenient for the individual, for he is in effect holding generalized purchasing power which he may use at any time and for any purpose that seems to him the most advantageous The use of money as a store of value is not without its disadvantages, however In the first place, the amount of value stored in money often proves to be highly variable, so that the holder enjoys an unearned increment or suffers an undeserved loss And in the second place—this is a point that will be elaborated later—the use of money as a store of value, or more accurately, fluctuations in this use of money, are liable to be disturbing to the functioning of the economic system

In monetary systems, therefore, money is the medium of exchange—the middle term in the exchange of goods and services for each other Whether such exchanges are completed in a very short period or whether they extend over a number of years, goods and services are exchanged for money and the money is then used to purchase other goods and services Thus a money economy is necessarily in some sense a price system When things are exchanged there must be a ratio between them, and the term “price” refers to the number of units of money required to buy an economic good or service In this sense every money economy, whether capitalist, communist, socialist, or fascist, must involve a system of prices But the term “the price system” has come to signify a particular type of

money economy—the laissez-faire capitalistic system in which economic activity is controlled, not by some central authority, but by the decisions of independent producers and consumers, each doing those things which under the existing circumstances appear to him to be the most advantageous. This type of economy has been called the price system because economic choices under it are ruled to such an extent by prices. Enterprisers fix upon the types and amounts of their output only after comparing the prices that they will receive and the prices (costs) that they must pay for the goods and services necessary to bring forth the output. Workers' choices of the types—and to some extent of the amounts—of labor that they will perform are made in the light of the prices they can get for their services in various fields. Other productive facilities are allocated in the same way. Likewise, decisions as to the types and quantities of things consumed are greatly influenced by the relative heights of prices. Thus price enters into every economic decision.

#### THE INFLUENCE OF MONEY ON THE FUNCTIONING OF THE ECONOMY

It must not be too hastily concluded, however, that because money is employed in such a large proportion of economic transactions and because price enters into so many decisions money exerts an independent influence on the functioning of the economic system. It is at least logically possible that money could function as a useful but purely passive servant which would merely transmit the decisions of producers and consumers without adding any influence of its own, so that it could be ignored as a causative factor. In fact, many economists—and particularly those of the so-called classical school, who were interested primarily in "long-run" economics—have repeatedly warned against overemphasis on the independent influence of

money They realized, and even stressed, the importance of money as a labor-saving device and described, as has already been done in this chapter, the serious difficulties of effecting exchanges by means of barter But they insisted that, except in so far as it facilitated exchange, the use of money did not normally affect the operation of the economy, they held that in a money economy the total amount of employment, the volume of production, the types and proportions of the various goods and services produced and consumed, the exchange values of the various goods and services in the market, and the distribution of real wealth and income among the members of the community are normally the same as they would be in a highly developed and efficient barter economy, if such an economy could be devised So sure of the validity of this contention were the classical economists that they couched much of their analysis in terms of barter, despite the fact that they were attempting to explain the operation of a money economy This view of the significance—or more accurately, the insignificance—of money has been most clearly stated by John Stuart Mill

It must be evident, however, that the mere introduction of a particular mode of exchanging things for one another by first exchanging a thing for money, and then exchanging the money for something else, makes no difference in the essential character of transactions

There cannot, in short, be intrinsically a more insignificant thing, in the economy of society, than money, except in the character of a contrivance of sparing time and labor It is a machine for doing quickly and commodiously, what would be done, though less quickly and commodiously, without it and like many other types of machinery, it only exerts a distinct and independent influence of its own when it gets out of order

The introduction of money does not interfere with the operation of any of the Laws of Value laid down in the preceding chapters The reasons which make the temporary or market value of things depend on the demand and supply, and their

average and permanent values upon their cost of production, are as applicable to a money system as to a system of barter. Things which by barter would exchange for one another, will, if sold for money, sell for an equal amount of it, and so will exchange for one another still, though the process of exchanging them will consist of two operations instead of only one. The relations of commodities to one another remain unaltered by money—the only new relation introduced is their relation to money itself, how much or how little money they will exchange for, in other words how the Exchange Value of money itself is determined.<sup>1</sup>

If money always performed its functions perfectly, the classical economists would have been right, it would be neutral in its effects and therefore could be ignored in explanations of the functioning of the economy, or at most accorded only the amount of attention that is given to each of the hundreds of other labor-saving devices employed for economic purposes. Unfortunately, however, no monetary system as yet evolved has functioned perfectly or even approached perfection, each has displayed an unfortunate proneness to "get out of order" and to exert "a distinct and independent influence of its own." The classical economists recognized this fact, of course, but they thought that monetary disorders were infrequent enough and the resulting disturbances small enough to be ignored without invalidating an analysis couched in terms of barter, particularly since this analysis was concerned with long-run, rather than short-run, phenomena. Modern monetary theorists, on the other hand, have come to believe that money is virtually always "out of order"—though in different ways and to a fluctuating degree—and that this malfunctioning of money produces significant effects upon the aggregate volume of employment and production, the relative amounts and exchange values of in-

<sup>1</sup> *Principles of Political Economy*, Book III, Chapter VII, ¶ 3.

dividual commodities produced and sold, and the distribution of real wealth and income among the members of the community. These effects are particularly important in the short-run and are capable of altering significantly the long-run behavior.

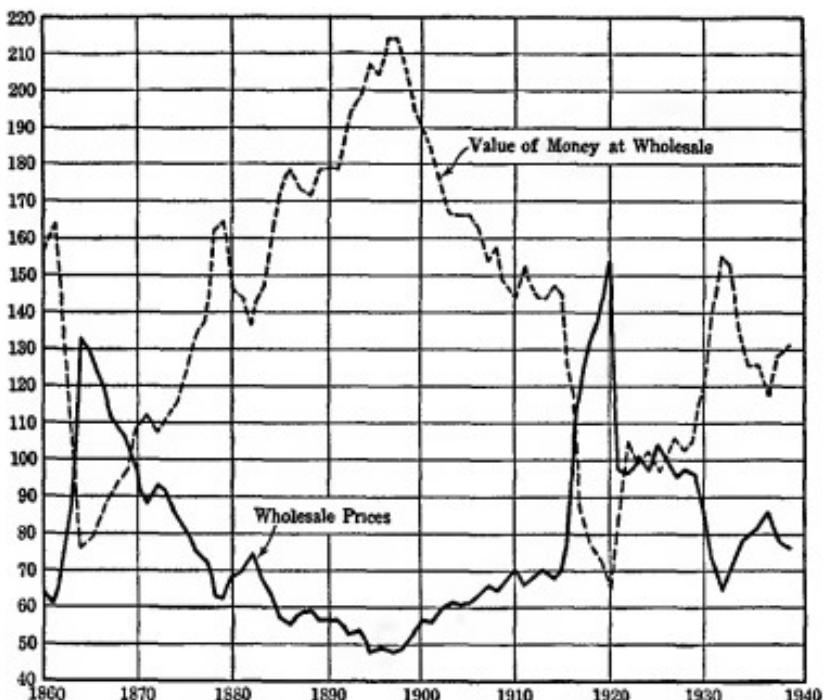


CHART I—Wholesale Prices and the Value of Money in Terms of Wholesale Goods in the United States, 1860-1939 (1926 = 100)

of the economy, for the long run is, after all, made up of a series of short runs, each of which is affected by monetary developments. It is because of its influence on the amounts and types of employment and production and on the distribution of real wealth and income that money is such an important subject of study.

The unsatisfactory functioning of money is closely bound up

with fluctuations in its value.<sup>2</sup> If money is to serve satisfactorily as a unit for measuring the values of economic goods and as a standard of deferred payments, it must itself have a constant, or nearly constant, value. It is easy to imagine the confusion and injustices that would result if the unit for measuring weight—such as the ounce—were to shrink by two-thirds in one period and then to double in the next. Yet money, which is probably the most important unit of measurement in the entire economic system, has never been a constant, or even an approximately constant, unit.<sup>3</sup> To cite only two cases out of many, the exchange value of the dollar declined by two-thirds between 1897 and 1920 and then doubled between 1920 and 1932.<sup>4</sup> Changes of 10 per cent or more in the value of money from one year to the next are not at all rare.<sup>5</sup>

### THE VALUE OF MONEY

It is necessary to digress for a few moments to ask, "What is meant by the value of money?" Since money is ordinarily employed as the unit of account, the exchange values of other economic goods are usually measured in terms of money. A good that can be sold in the market for two dollars has a "value" of two dollars; it can purchase two dollars in the market. But to measure the value of money in terms of itself

<sup>2</sup> It is fairly common for economists to state that the influence of money upon the functioning of the economy is traceable to the fluctuations in the value of money. This is not strictly true. If the analysis is carried one step further back, the influence of money is found to emanate from variations in the flow of money expenditure (or money demand) relative to the supply of goods and services available for purchase with money. And, as will later be emphasized, fluctuations in the flow of money may effect changes in the quantities of goods and services produced and sold even if the prices of those things remain unaltered. This can occur when articles are produced and sold by monopolists or quasi monopolists who maintain inflexible prices; it is highly unlikely to occur in the case of articles produced and sold under conditions approaching perfect competition.

<sup>3</sup> This refers to the value of money relative to goods at wholesale.

would be meaningless, a dollar is obviously equal to a dollar. By the term "the value of money" is meant the purchasing power of money—the ability of each unit to command goods and services in exchange. The value of money is thus clearly related to the height of prices; it is, in fact, the reciprocal of the general level of prices. When the price level is high, the value of money—the ability of each unit to purchase goods and services—is low. And when the price level is low, the value of money is high. This inverse relationship between the level of prices and the value of money must be kept in mind in reading the following chapters.

**Index Numbers**—To measure movements of the level or average of prices, index numbers are used. An index number of prices is a figure showing the height of average prices at one time relative to their height at some other time that is taken as the base period. To serve as an example, indexes of average wholesale prices in the United States for three different years are given below. In this case 1926 is taken as the base year,

Year	Wholesale Price Index
1920	154
1926 (base year)	100
1932	65

that is, the average prices of wholesale commodities in other years are compared with the level prevailing in 1926. The index number for the base year is 100, for the average of prices in that year is necessarily 100 per cent of itself. The index number of 154 for 1920 indicates that the average prices of wholesale commodities covered by the index were in that year 154 per cent of the level obtaining in 1926. An aggregate of wholesale commodities that cost \$100 in 1926 would have cost \$154 in 1920. The index number of 65 for 1932 indicates that the average of wholesale prices was in 1932 only 65 per cent of its 1926

level In 1932 only \$65 would purchase the same aggregate of wholesale commodities that would have cost \$100 in 1926

The average of prices whose movements are shown by a price index is not, however, a simple one that attaches equal weight to each price regardless of the economic importance of the commodity to which it relates To weight equally the prices of pins and of wheat would be as absurd as to attach equal importance to a ten-minute quiz and a final examination Price indexes attempt, therefore, to measure the movements of a weighted average of prices, each individual price being weighted by the amount of production, or consumption, or trading of the good to which it relates

Index numbers have been constructed to show the behavior of many types of price averages Among those most widely used are the indexes of (1) the general level of the prices of all goods, services, and securities sold for money, (2) retail prices, (3) wholesale prices, and (4) the cost of living The reciprocal of each of these indexes shows the changes in the purchasing power of money over the things whose prices are included in the index<sup>4</sup>

Changes of price levels would be of little or no economic significance if all individual prices were affected simultaneously and in the same proportion Under these conditions each person would find that changes in the money costs of the things he purchased were offset by proportional changes in the prices of the things he sold, so that his economic position remained

<sup>4</sup> The construction of index numbers presents serious difficulties, both theoretical and practical in nature These cannot be discussed at length here It can only be noted that accurate price quotations must be obtained, that the quotations obtained for different dates must be comparable and must refer to the same article, that proper weights for individual prices must be assigned at the outset and must be properly adjusted through time, and that care must be used in selecting the mathematical formula employed in computing the index For further discussion of some of these problems of index making, see W. J. King, *Index Numbers Elucidated*, New York, 1930

unaltered. Unfortunately, however, prices are not affected uniformly. Some respond quickly and move rapidly, others respond only after a delay and may even then move slowly.<sup>5</sup> It is precisely because of this nonuniformity in the behavior of individual prices that changes in the value of money are capable of exerting such far-reaching effects on (1) the distribution of real wealth and income, and (2) the volume of employment and production.

#### **EFFECT OF CHANGES IN THE VALUE OF MONEY ON THE DISTRIBUTION OF REAL WEALTH AND INCOME**

Changes in the value of money can shift the distribution of wealth partly because (a) debts are expressed in terms of money, and partly because (b) the prices of some types of wealth are changed more than others.

We have already seen that money is commonly used as the standard of deferred payments—the unit in terms of which debts are stated. The volume of these money debts outstanding in modern society is very large, competent statisticians have estimated that in the United States in 1929 it amounted to more than \$250,000,000,000.<sup>6</sup> It is evident that every change in the value of money alters the real burden of these debts. If prices

<sup>5</sup> For a discussion of the reasons for this nonuniformity of price responses, see pp. 53-54.

<sup>6</sup> The Twentieth Century Fund, *Debts and Recovery*, New York, 1938, p. 1. A few of the major items of debt were roughly

Government tax exempt securities	\$32,000,000,000
Corporate bonded debt	47,000,000,000
Farm and urban mortgages	40,000,000,000
Commercial bank debts in form of deposits	47,000,000,000
Short-term debts receivable at banks and non-financial corporations	53,000,000,000
Life insurance company debts to policy holders	12,000,000,000
Mutual savings bank deposits	9,000,000,000
Building and loan association debts to shareholders . . .	5,000,000,000

rise between the time a debt is incurred and the time it is repaid, the debtor gains and the creditor loses, for the debt is repaid with dollars containing less purchasing power than those lent. But if prices fall between the time a debt is created and the time it is repaid, the debtor is forced to return more purchasing power than he borrowed -

The above statements can be clarified by an example. Suppose that in a year when the price index is 100 Mr B establishes a business requiring \$100,000 worth of property. He supplies \$50,000 himself and borrows the remaining \$50,000 from Mr L on a ten-year note. During the ensuing ten years, however, the index of prices rises to 200 and the money value of the property to \$200,000. At the end of the period Mr L is repaid \$50,000 in retirement of the debt, but this sum will buy only as much as \$25,000 would have bought at the time that the loan was made. Mr B, however, retains an equity in the property of \$150,000, which will purchase as much as \$75,000 would have purchased in the year the loan was made. In effect, the rise of prices transferred from the creditor to the debtor an amount of purchasing power equal to \$25,000 at the time the debt was incurred. But if instead of rising prices had fallen by 50 per cent during the life of the loan, the shift of wealth would have been in the opposite direction. In this case Mr L would have been repaid \$50,000, which would represent twice as much purchasing power as he lent. Mr B would have suffered, of course, for the money value of the property would have fallen perhaps to only \$50,000, thereby wiping out his entire original investment. With these principles in mind it is easy to understand why creditors—holders of mortgages, corporation and government bonds, life insurance policies, and other obligations fixed in terms of money—should be so opposed to inflation. It is also not difficult to see why debtors—

be they homeowners, farmers, other business men, or borrowers for consumption purposes—should find deflation so repugnant

Changes in the value of money also effect redistributions of wealth because of the fact that the prices of some types of property move further and more quickly than those of other types. In periods of general price rise, owners of property whose price rises rapidly gain relative to those whose property appreciates more slowly. And in periods of general price decline, owners of property whose price falls rapidly lose relative to those whose property decreases but slowly in price.

Changes in the value of money are also accompanied by great shifts in the distribution of the real income of the community. This is owing to the fact that some types of money income move so much further and more rapidly than others. Outstanding among the types that move slowly are interest, rents, pensions, annuities, salaries of public servants, and to a lesser extent salaries and wage rates of workers in private industry. These types of income are sometimes fixed for considerable periods by unmatured contracts, and so cannot change unless the contracts are broken or modified. And even when not tied by contract, their movement is often hampered by market rigidities. The most volatile type of money income, on the other hand, is composed of the profits of enterprises, in which are included the earnings of the common stock of corporations. In periods of rising prices, those with volatile money incomes fare better than those whose incomes are more nearly fixed in terms of money. In periods of falling prices, however, the results are reversed and those with relatively fixed incomes fare better than those whose incomes are more volatile.

The ability of an inflation to alter the distribution of wealth and income was amply demonstrated by the tremendous German inflation of 1914-1923. As to this, Bresciani-Turroni has stated

Inflation was always a terrible instrument for the redistribution of wealth. It is not possible to study the influence of the inflation separately from those of other causes which acted at the same time, e.g., the war. But it may be said that on the whole the inflation generally favored the entrepreneurs and the owners of the material means of production, especially strengthening the positions of industrial capitalists, that it caused a lowering of the real wages of workmen, that it decimated or destroyed altogether the old middle class of investors, possessors of those securities which now could only, ironically, be said to show a fixed income, and that it created a new middle class of intermediaries, traders, small speculators on the Bourse, and small profiteers of the monetary depreciation.<sup>7</sup>

The shifts of wealth and income that occur during deep deflations are just as great, though in the opposite direction. Any person who incurred debts or other money obligations before the serious fall of prices following 1929 will attest to this fact. During this period, millions of "owners" (farmers, homeowners, and holders of the stock of corporations) found their equities, which in some cases represented all of their life savings, completely wiped out. That many were convinced of the injustice of this was indicated by the occurrence of debtors' strikes, the amendment of the bankruptcy laws in such a way as to strengthen the position of debtors, and the widespread demand for inflationary monetary policies.

#### EFFECT OF CHANGES IN THE VALUE OF MONEY ON THE VOLUME OF EMPLOYMENT AND PRODUCTION

We have just seen that changes in the value of money are accompanied by sizable, haphazard, and often undesirable shifts in the distribution of the available wealth and income. These are serious enough. But even more serious are the accompanying fluctuations in the amount of employment and therefore in the

<sup>7</sup> Constantino Bresciani Turroni, *The Economics of Inflation*, London 1937, p. 286.

size of the real income produced and made available for distribution. In many periods the size of the social income is decreased so much that even those receiving increasing shares of it suffer a decline in the absolute amounts of their incomes.

Under the capitalistic system, decisions as to the amount of production that will be undertaken are made by enterprisers, whose object is to maximize their profits. When the outlook for profits is bright, enterprisers are willing to assume risks and to give employment to most of the available factors of production. At such times the real income of the community approaches the maximum of which the economic system is capable. But when prospects for profits are unfavorable, and especially when they give way to a probability of losses, enterprisers do not find it worth their while to employ in production all the existing capital, land, and labor. This decline in employment is necessarily accompanied by a shrinkage of the community's real income.

Changes in price levels affect the volume of business activity through their effects on the relationships between enterprisers' selling prices and costs, and therefore on the size of enterprisers' profits. It is a matter of common knowledge that enterprisers' costs—which are composed largely of wages and salaries, interest, rents, taxes, and allowances for depreciation and obsolescence—move more slowly than selling prices during both the upswing and the downswing. In a period of rising prices, therefore, costs lag behind selling prices, enterprisers reap larger rewards in the form of widening profit margins, the amount of employment is increased, and real income grows. Events in a period of falling prices are just the reverse, costs fall more slowly than selling prices, profit margins narrow and in some cases disappear completely, employment and business activity dwindle, and the community's real income shrinks. This is the condition that has come to be known widely, if not popularly, as "poverty in

the midst of plenty" Much of the poverty in such periods exists because there is an insufficient "demand" for the goods and services that are wanted and even needed badly by the idle laborers who would like nothing better than a chance to work Such conditions were not envisaged by the classical economists when they insisted upon the insignificance of money as a causative factor in the economic process

During periods of falling prices and production, the class suffering the greatest shrinkage of income is made up of the risk-takers—the owners of business But the so-called "fixed-income" groups are far from immune from loss The owners of mortgages, bonds, and other obligations on which interest and principal payments can no longer be made, owing to the decline of income, derive but little consolation from the knowledge that the money that they should be, but are not, receiving has an enhanced purchasing power And the fact that prevailing hourly wage rates represent enhanced buying power is not very cheering to the man who is totally unemployed or who works at most only a few hours a week

#### MONETARY THEORY ITS PURPOSE AND SCOPE

The preceding sections, brief as they are, should have indicated that the behavior of money is so important that it must be studied by anyone who would understand the actual functioning of the economic system This branch of economics, the behavior of money and its interrelations with the functioning of the economy, is usually referred to as monetary theory It is to this subject that the remainder of this book is devoted

A few preliminary remarks concerning the scope and purposes of monetary theory may help to place the following chapters in their proper perspective The scope and purpose of this branch of theory have already been described in very general terms they are to define and explain the behavior of money

and its interrelations with the functioning of the economy. It is clear, therefore, that one's description of the specific content of monetary theory must depend on his belief as to the nature and extent of these interrelations. A few of the opinions on this matter will be noted and discussed briefly.

The position accorded to monetary theory by the classical economists—by which is meant those who were concerned with long-run economic adjustments, or with conditions of static equilibrium—has already been suggested. They believed that the one and almost exclusive function of monetary theory was to explain the determination of the value of money, or in other terms, the height of prices in general, other economic phenomena, they held, were very largely determined, particularly during the longer period with which they were concerned, by nonmonetary factors. Accordingly, the monetary theory of these economists was cast in such a form as to focus attention on the value of money.

But as general economic theory came to concern itself with the economics of shorter periods and as the influence of money came to be better understood, opinion regarding the scope and purpose of monetary theory shifted. The immediate primary concern of monetary theory continued for a considerable period to be the value of money, but there was this difference: the effect exerted by increases and decreases in the value of money on business activity was emphasized. With the classical economists the explanation of the value of money was an end in itself, with this change in attitude the value of money became of significance because of its influence on other economic phenomena. The causal sequence was now assumed to be through money to the height of prices and thence to the amount of employment and production that individual enterprisers would undertake. As those who are familiar with general economic theory will recognize, this analysis assumed that there existed

perfect or near-perfect competition in each industry, that each producer, believing that prices ruling in the market for his product were beyond his control or even his influence, would merely adjust his activities to the prices he found prevailing. If perfectly competitive conditions did exist in every market, it would undoubtedly be true that money could affect the decisions and actions of individual enterprisers only through its effect on prevailing or expected prices.

Recently, however, monetary economists have come to believe that monetary theory erred in arguing from changes in prices to changes in the amount of employment and production. Though they admit that this causal sequence does exist in industries operating under conditions approaching perfect competition, they deny its validity for industries characterized by strong elements of monopoly so that each enterpriser has, and knows he has, some control over the price of the product he sells. Under such conditions, money can influence business activity without previously influencing prices. It is impossible to predict, without foreknowledge of the type of price and production policies that will be followed by the monopolists or quasi-monopolists, what the sequence of events will be when the money demand for their products is altered. In some cases, the increase or decrease in money demand may be accompanied by virtually simultaneous increases or decreases in both prices and output. In others, prices may be allowed to exhibit most of the effects of a growth or contraction of money demand, output being but little altered. In still others—and this is likely to occur in industries in which prices are fixed by either explicit or tacit agreements among the various member firms and in which agreement on new prices can be achieved only with great difficulty—the effects of increases or decreases in money demand may be manifested almost solely in enhanced or diminished output, prices being maintained at a constant level for a more

or less protracted period. It is significant that in this last case the influence of money on output is not transmitted through preceding effects on prices, but is actually magnified because prices are not adjusted to the new situation. Largely because of economists' growing recognition of the prevalence of monopoly power and price inflexibility in the economic system, price levels in modern monetary theory must share the central position with, and in some cases yield it to, the effects of money on the behavior of output.

The reader should perhaps be warned that the analysis in this and the following chapters assumes an economic system in which the volume of production and the height of individual prices are relatively free from centralized control and are determined by the choices and actions of buyers and sellers. It is applicable to centrally controlled economic systems, such as those in Germany and Russia, only with numerous and very important qualifications.

## CHAPTER II

### THE TRANSACTIONS TYPE OF QUANTITY THEORY GENERAL PRINCIPLES

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#### INTRODUCTION

Of all the theories purporting to explain the determination of the value of money at any one time and the variations of this value over periods of time, the so-called quantity theory in its various forms is the oldest and has been the most influential. Crude statements of it are found at least as far back as Roman writings, it became somewhat better developed during the price revolution of the sixteenth century, and by the end of the eighteenth century it had received clear formulations, notably from Bodin, Cantillon, and Hume, that resemble closely those of modern quantity theorists. Since the time of Hume the quantity theory in one or another of its forms has been accepted by a majority of economists, despite the criticism to which it has been subjected. As the quantity theory developed, it assumed two general forms, though both lead to the same conclusions. The first, which will be discussed in this and the following chapter, is usually referred to as "the transactions approach." The second, which will be described in Chapter IV, is called "the cash-balance approach."

It is necessary at the outset to note that the name "quantity theory" does not at the present time describe accurately the type of analysis to which it refers. It was a faithful description of the theory to which it was first applied, but though the name has remained unchanged the theory has undergone such an

evolution as to be hardly recognizable. There is little more resemblance between the modern "quantity theory" and the "quantity theory" of the late Middle Ages than there is between the houses of the two periods. This fact can be shown by a brief sketch of the evolution of the theory.

(It is based upon the fundamental characteristic of money that money as money is not useful in itself and is not demanded for itself.) However large or small its total quantity, it is desired by people only to be passed along sooner or later in the purchase of other things. For this reason, stated the quantity theory in its earliest and crudest form, the purchasing power of money depends upon the relative quantities of money and of the things to be purchased with it. If its quantity is large relative to the quantity of things to be purchased with it, the purchasing power of each unit of money must be low—prices in general must be high. If, however, its quantity is small relative to the quantity of things to be purchased with it, prices in general must be low. It is to be noted that according to this theory it is the quantity of money of all kinds—not its "quality," "backing," or commodity content—that is of primary importance in determining the value of money, the quality of money affects prices only in so far as it affects the quantity available.<sup>1</sup>

But important as is the ratio between the quantities of money and of goods to be sold for money, no competent economist since the time of Hume has believed that there is any fixed and automatic relationship between the quantity and the value of money. All have recognized that changes in the money supply affect general prices only by affecting total money expenditures, and that these expenditures are by no means always proportional to the quantity of money. Another factor must therefore

<sup>1</sup> It will be seen later that the more advanced forms of the quantity theory also recognize that the "backing" of money may at times affect its rapidity of circulation and thereby its purchasing power.

be considered—the velocity, or rapidity of circulation, of money. One unit of money spent ten times in a period exerts the same effect on prices as ten units spent only once, an increase in the rapidity of circulation of money tends to increase the money demand for things and to enhance prices, just as would an increase in the money supply. And conversely, a decrease in the velocity of money tends to reduce aggregate expenditures and prices, just as would a decrease in the money supply.

Thus, the more refined versions of the quantity theory recognize three immediate factors determining the general level of prices (1) the quantity of money, (2) the velocity of circulation of money, and (3) the physical volume of trade to be effected with money. It is often stated that "the general level of prices varies directly with the quantity of money and its velocity of circulation and inversely with the volume of goods and services to be purchased with money." And variations of the price level may be traceable to changes in any one or more of these factors. It is to be emphasized that the modern versions of the quantity theory do not state that the general level of prices depends solely upon the quantity of money, or that changes in prices must originate with changes in the quantity of money, or that a change in the quantity of money always and necessarily produces a proportional change in prices. Those who criticize the quantity theory on the ground that it does state these things are merely fencing with ghosts.

#### THE EQUATION OF EXCHANGE

To carry their analysis beyond the preliminary stage indicated above, quantity theorists frequently employ an equation of exchange, which is stated as  $MV = PT$ , or sometimes as  $\frac{MV}{T} = P$ .

In this equation  $M$  is the average quantity of money of all kinds in circulation in a given area during a specified period of time.

V, or velocity, is the average number of times each unit of M is spent for goods, services, and securities during some specified period. The product MV is, therefore, the total of money expenditures for all goods, services, and securities during the period; it is the aggregate money demand for these things. T is the physical volume of things for which money is spent during the period—the physical volume of trade in goods, services, and securities effected with money during the period. P is the average price per unit of T. It is immediately obvious that the equation of exchange is a truism, (the aggregate value of the money given in exchange for goods, services, and securities (MV) is equal to the money value of the goods, services, and securities given in exchange for the money (PT)). If, for example, 100 units of money (dollars) are spent on an average of 30 times during a year to purchase 1500 units of goods, services, and securities at an average price of \$2 per unit, the \$3000 of money expenditure is obviously equal to the money value of the things purchased with the expenditure.

Even though it is a truism, the equation of exchange is nevertheless a powerful tool of analysis and investigation. In it are included the three direct or immediate determinants of the price level M, V, and T, the price level varying directly with M and V and inversely with T. It must be remembered, however, that though M, V, and T are generously granted the status of direct or immediate determinants, they are in no sense the ultimate determinants of the price level. Instead, they are themselves determined by a host of underlying objective facts and human decisions.<sup>2</sup> The ultimate determinants of the value of money are to be found behind the equation of exchange and not in it. However, anyone who attempted to deal with this multitude of underlying influences without classifying them

<sup>2</sup> For Professor Irving Fisher's insistence on this point, see *The Purchasing Power of Money*, New York, 1926, pp. viii, 74, 149, 150, and 182.

into a few main categories would end up by becoming hopelessly involved in his analysis and unintelligible in his exposition. The equation of exchange enables the monetary economist to avoid these difficulties by supplying him with a logical framework on which to arrange his analysis and exposition. Our task now is to explain why  $M$ ,  $V$ , and  $T$  behave as they do.

### M, THE QUANTITY OF MONEY

$M$  is the average quantity of money of all kinds in circulation in a given area during a specified period of time. It is made up of two parts (1) cash in circulation, that is, all coin and paper money outside the banks and the Treasury, and (2) bank deposits subject to check.<sup>3</sup> Though checks, by means of which the ownership of demand deposits is transferred from payor to payee, suffer from the disadvantage that they may not be acceptable from strangers or persons of questionable integrity and are sometimes inconvenient for making small payments, they possess some important advantages over coins and paper money. They are not so liable to loss or theft, they can be transported more cheaply and quickly, they can be written for the exact amount required in each transaction so that there is no problem

<sup>3</sup> It does not include coin or paper money locked up in banks as till money and reserves or hoards held in the Treasury.

Much discussion has centered around the question, "Are time and savings deposits money?" In this book, time and savings deposits that are subject to check, i.e., that may themselves be spent for goods, services, and securities without first being converted into checking deposits or cash, are included as money. Those that may not be spent without conversion into checking deposits or cash are excluded from the money category, despite the fact that they act as a store of value, thereby tending to free checking deposits and cash from that burden and to permit the average velocity of money proper to be higher than it would be if investment in time and savings deposits were not possible. This procedure appears to be justified in view of the fact that other types of investment, including physical goods as well as all kinds of securities and credit instruments, are also employed as stores of value and release money to be used as a medium of exchange. It must be admitted, however, that the border line between money and non money is far from clear.

of making change, and when canceled they serve as satisfactory receipts for payment. So telling are the advantages of demand

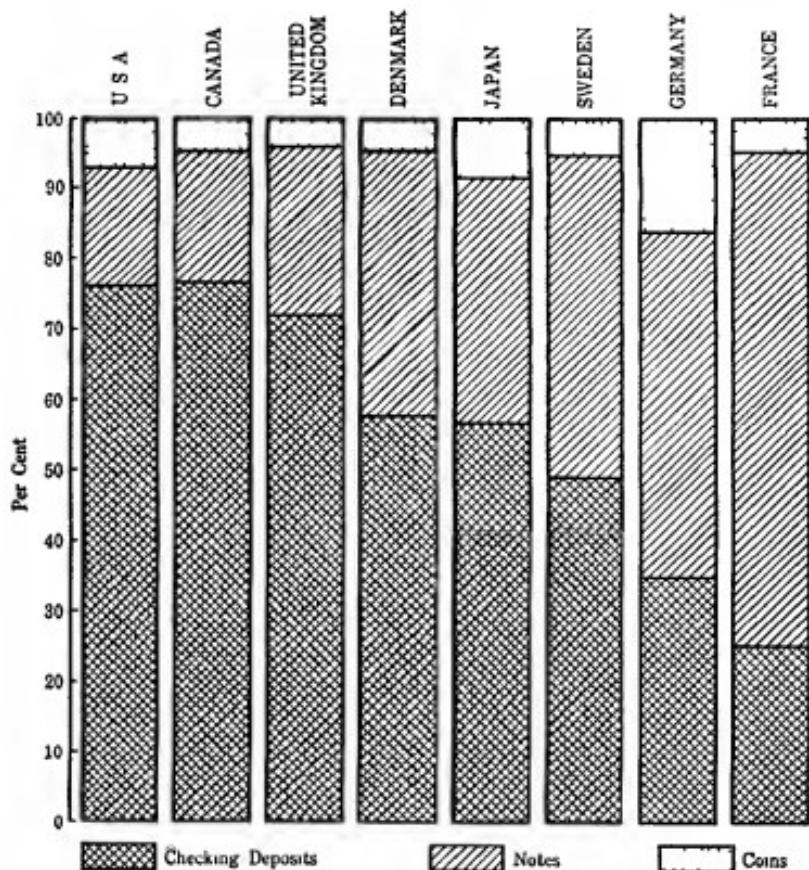


CHART II.—Composition of the Money Supply in Selected Countries at the End of 1936 (Adapted from a chart in Rifat Tirana's "Behavior of Bank Deposits Abroad," *American Economic Review Supplement*, March, 1940, p. 98.)

deposits as money that this means of payment is used in virtually all transactions involving large sums and in many smaller transactions as well. It is estimated that in the United States these deposits make up roughly three-quarters of the circulating

medium and are used to effect over 90 per cent of all money payments

At the present time in western nations, virtually all cash, including both coins and paper money, is issued by governmental agencies—practically always by central rather than local governments—or by central banks that are more or less closely controlled by governments. The function of issuing cash is considered inappropriate to private enterprise. But the larger part of the circulating medium, bank deposits transferable by check, is issued not by the government or the central bank but by the commercial banks, which are privately owned and operated. These checking deposits—which, it must be emphasized, are nothing but the banks' debts payable on demand and transferable by written order—originate in two principal ways (1) through the deposit of cash with the banks, and (2) through the making of loans and investments by the banks. An increase in checking deposits originating in a deposit of cash does not alter directly the magnitude of the money supply, for such an increase is offset by the decrease of cash in circulation. It may, however, enable the banks to augment the total of money in the second way just mentioned, that is, by extending their aggregate loans and investments and by giving deposit credits to the borrowers and sellers of investments. Deposits created by the lending and investing operations of the banks—and they comprise by far the larger part of deposits in existence—are completely indistinguishable from deposits created by the storing of cash, and can be spent just as readily. The only limitation upon the power of the banks to create money is the requirement, either legal or customary, that they maintain reserves at least equal to a stipulated percentage of their deposits. This minimum reserve ranges from about 10 to about 20 per cent, so that the banks may create and maintain deposits equal to from five to ten times the volume of their reserves.

The way in which the banking system alters the money supply through its lending and investing operations can be clarified by a few hypothetical examples Suppose that the commercial banking system increases its loans to customers by \$1,000,000 The banks accept the borrowers' promissory notes for this amount and give in return their own promises to pay on demand—which debts we call demand deposits Debts are thus exchanged between borrowers and the banks, the banks accept the borrowers' debts which bear interest but are not generally acceptable as money, and the borrowers receive the banks' debts which do not bear interest but which serve as money In this exchange the volume of money has been enhanced, demand deposits have been expanded without any offsetting decline in other types of money The same result may be attained by a net increase in the banks' holdings of investments Suppose that the banking system raises its holdings of securities by \$1,000,000 In this transaction the banks take over long-term debts from the sellers of securities and give their own debts—deposits—in return

Just as the banks as a group can expand the money supply by increasing the aggregate of their loans and investments, they can shrink the money supply by contracting the total of their loans and investments Suppose, for example, that the commercial banking system decreases its loans by \$1,000,000 and that the erstwhile borrowers repay their obligations by writing checks on their deposits The banks will deduct this amount both from their deposit liabilities and from their assets in the form of loans, so that both the loans and the deposits of the banking system are thereby reduced \$1,000,000 This represents a net decrease in the money supply, for deposits are lowered without an offsetting increase in other types of money The same effect on the size of the money supply is achieved if the loans are

repaid with cash rather than by canceling deposit claims against the banks, in this case cash in circulation is reduced without an offsetting addition to deposits. The money supply can also be lowered through a net reduction of investments by banks. They surrender their claims on these long-term debts, and buyers in turn relinquish their holdings of deposit claims or cash.

Thus in modern monetary systems a large part of the money supply was originally created by the banking system through its lending and investment operations, and most of the fluctuations in the quantity of money are traceable to fluctuations in the volume of bank loans and investments. In the course of our analysis we shall have to ask whether it is desirable to permit the money supply to be so largely determined by private enterprisers whose primary concern is not monetary policy aimed at economic stabilization, but rather the profits to be realized from their lending and investing activities.<sup>4</sup>

We have already discovered that the money supply is made up of cash in circulation and demand deposits and that the cash is usually issued by the government and the central bank whereas checking deposits are issued by the privately owned and operated commercial banks. The next question to be answered is, "What factors determine the total amount of money outstanding in these two forms?" Some of the most important of these determinants are outlined in Table 1.

One of the important determinants of the size of the money supply is the magnitude of the monetary base, that is, the supply of funds available for use as either cash or bank reserves. An increase or decrease in this base exerts a pressure toward a larger or smaller money supply. This monetary base has three components, the monetary gold stock, other types of money

<sup>4</sup> For a further description of the ability of the commercial banking system to create and destroy money, see C. A. Phillips, *Bank Credit*, New York, 1926, Chapters II-IV.

TABLE 1—DETERMINANTS OF THE MONEY SUPPLY

I The size of the monetary base, i.e., the supply of funds available for use either as cash or as reserves behind checking deposits

1 The size of the monetary gold stock

- a The amount of gold accumulated in earlier periods
- b Additions to monetary gold stock from current gold production
  - 1) Real cost of production of gold
  - 2) Consumption of gold for nonmonetary purposes
- c Imports and exports of gold

2 The amount of other types of money issued by the government

- a Coins, except gold
- b Paper money, except gold certificates

3 The amount of central bank credit outstanding

II The community's choice as to the relative amounts of cash and of checking deposits that it wishes to hold

III The height of the ratio between bank reserves and checking deposits

1 Legal or customary reserve requirements

2 The policy of banks as to permitting reserves to be deficient or excessive, relative to requirements

issued by the central government, and central bank credit outstanding

The monetary gold stock, whether coined or used as "backing" for gold certificates, is usable as either cash or bank reserves.<sup>5</sup> For the world as a whole, it is equal at any time to the difference between gold production in the past and the amount of gold lost or devoted to nonmonetary purposes, and the change in it during any period depends upon the relative magnitudes of gold production and consumption. The monetary gold stock of any particular country varies with the domestic production and consumption of gold and with gold imports.

<sup>5</sup> Unless, of course, it is locked up in "sterilized" or "hoarded" accounts by the Treasury, Stabilization Fund, or central bank.

and exports A complete explanation of this component of the monetary base would necessitate a study of everything bearing upon the amount of gold produced and upon the amount devoted to nonmonetary uses This will not be attempted here, but more light will be thrown on the matter in Chapter V

The second component of the monetary base is "other types of money issued by the government" This comprises both coins (other than gold) and paper money (other than gold certificates) The coins, which are usually token money, may be of silver, copper, nickel, or any other suitable metal, but whatever their composition, they can be used as hand-to-hand cash or as bank reserves Paper money performs the same functions The quantity of these types of money outstanding is determined by the government

The third component of the monetary base, and one which is of growing importance, is outstanding central bank credit Central banks, or banks of issue—such as the Federal Reserve Banks, the Bank of England, and the Bank of France—can add to or subtract from the supply of cash and bank reserves by increasing or decreasing the volume of their outstanding loans and investments When a central bank increases its loans and investments, it must make payment to the borrowers or sellers of investments This may be done in two ways (1) by paying out cash, or (2) by giving a deposit credit with itself If cash is paid out, it may come out of stores previously held unused in the vaults of the central bank, or it may be in the form of additional paper money created and issued by the bank itself In either case, the released cash may be used as cash in circulation or as bank reserves But the central bank may, instead, give to the borrowers or sellers of securities a deposit credit with itself This, too, expands the monetary base, for in virtually every country deposits at the central bank may be counted as reserves by commercial banks On the other hand, a decline in

central bank credit outstanding tends to shrink the monetary base, for the repayer of loans or the buyer of investments from the central bank must make payment by remitting cash, which will be locked up or destroyed by the central bank, or by drawing down deposits at the central bank

In summary, the monetary base is composed of, and varies with, the monetary gold stock, other types of government money, and central bank credit outstanding. The relative importance of these components as causes of fluctuations in the monetary base varies with different monetary systems. Under an automatic gold standard in which "other types of government money" are changed but little and central bank credit outstanding is kept at a fairly constant ratio to central bank gold reserves, fluctuations in the monetary gold stock are by far the most important determinant of the size of the monetary base. But as monetary systems come to exhibit fewer and fewer of the characteristics of the automatic gold standard, variations in the monetary gold stock exert less and less control over the size of this aggregate. Under gold standards subjected to a high degree of management, the central bank and the Treasury often prevent changes in this stock from effecting equivalent changes in the total monetary base. And under inconvertible paper standards monetary gold may be relatively unimportant or even completely absent, so that the monetary base depends largely, if not solely, on other types of government money and central bank credit.

It must be emphasized, however, that the money supply does not always bear a constant relationship to the size of the monetary base, the monetary superstructure supported by each dollar of that base may vary greatly in size. How large this superstructure will be relative to each dollar which supports it varies with the relative amounts of cash and of checking deposits that the community elects to hold, and upon the height of the ratio between bank reserves and checking deposits. The

greater the proportion of its payments that the community effects by means of checking deposits rather than cash, the larger will be the aggregate volume of money that can be maintained by a given monetary base. This is owing to the fact that one dollar used as hand-to-hand cash supports only itself, i.e., one dollar of money, but one dollar held in bank reserves can support several dollars of money in the form of checking deposits. If, for example, the banks maintain a 10 per cent reserve against checking deposits, one dollar of reserves will support ten dollars of these deposits, if the ratio of reserves to deposits is 20 per cent, one dollar of reserves will support five dollars of deposits. It is evident, therefore, that a shift in the relative amounts of cash and checking deposits held by a community can bring about a change in the total quantity of its money, and this without any alteration in the size of the monetary base. If the community elects to hold a larger portion of its money in the form of deposits rather than cash, a larger portion of the monetary base finds its way into bank reserves, and the banks are enabled to create more deposits by expanding loans and investments. But if the community chooses to hold a larger proportion of its money in the form of cash rather than deposits, owing perhaps to distrust of the banks or to the imposition of taxes or service charges on the use of deposits, a larger portion of the monetary base is used as hand-to-hand cash, a smaller portion is available for use as bank reserves, and the banks may have to contract their deposits by reducing their loans and investments.

A third determinant of the quantity of money in a country is, as has been indicated, the height of the ratio between bank reserves and deposits. The higher the ratio of reserves to deposits, the smaller is the amount of checking deposits that can be supported by a given quantity of reserves. To repeat the example used earlier, if the ratio is 10 per cent, one dollar of

reserves can support ten dollars of deposits, but if the ratio is 20 per cent, one dollar of reserves can support only five dollars of deposits

In the United States banks operate under legally determined minimum reserve requirements. In most other countries, minimum reserve ratios are determined not by law but by custom. In both cases, however, the banks tend in normal periods, and especially in prosperity periods, to create and maintain that volume of deposits that will reduce the reserve-deposit ratio to near its legal or customary minimum. To create less than this volume of deposits is to hold excess and sterile reserves—to forgo earnings that could be secured by expanding loans and investments. But in periods of recession and depression, when the demand for loans is small, when banks distrust investments, and when there is danger of runs on the banks, bankers are sometimes willing to allow excess reserves to accumulate and to create a smaller volume of deposits than could be supported by the reserves that they possess. They feel at such times that their loss of interest is at least compensated by the escape from risk and by the advantages of greater liquidity.

## V, THE VELOCITY OF MONEY

We have already seen that the size of the money supply influences prices only through its influence on the volume of money expenditures or the money demand for the things for which money is spent, and that expenditures are by no means perfectly correlated with the money supply. In other words, money's velocity or rapidity of circulation is one of the direct determinants of the volume of expenditures and therefore of the value of money. In fact, in many periods velocity fluctuates more widely than does the quantity of money, and sometimes much more widely.) But what determines the behavior of velocity?

As noted earlier, two of the functions of money are those of

acting as a medium of exchange and as a store of value. If each receiver of money immediately spent it all for goods, services, or securities—that is, used it immediately as a medium of exchange—the velocity of money would be almost infinitely great. But this rarely occurs. Though the receiver of money may dispose of it immediately, he may also hold some or all of it as a



CHART III.—Annual Rate of Turnover of Demand Deposits in 101 Leading Cities

This chart is based upon the relation of debits to individual accounts in leading cities to demand deposits in weekly reporting banks. It therefore includes the transfer of deposits in every kind of transaction. In the financial centers, particularly in New York City, the rate of turnover is greatly influenced by financial transactions. The rate of turnover of deposits in other places shows smaller fluctuations. (Source of data, the Federal Reserve Bank of New York.)

store of value for hours, days, months, or much longer periods. The longer this "average interval of rest" between receipt and expenditure, the lower is its velocity of circulation.<sup>6</sup> Thus anything that affects people's decisions regarding the length of time that they will hold money before passing it along influences its

<sup>6</sup> Cf. Knut Wicksell, *Interest and Prices*, London, 1926, p. 52.

velocity Since each person is free, under a capitalistic system, to determine his own policy as to holding and spending money, it is reasonable to assume that at each point of time he adjusts his holdings of money relative to his expenditures in that way which seems to offer the greatest net advantage in the circumstances in which he finds himself And changes in surrounding circumstances change people's estimates as to what constitutes the optimum or most advantageous adjustment of their holdings and spendings Some of the most important of these factors determining velocity are outlined in Table 2

TABLE 2—DETERMINANTS OF THE VELOCITY OF MONEY<sup>7</sup>

- I The stage of development of the credit and financial system and the extent to which the community uses it
  - 1 Ease of lending and investing
  - 2 Ease of borrowing
- II The habits of the community as to saving and consumption
- III The systems of payments in the community
  - 1 As to frequency of receipts and disbursements
  - 2 As to regularity of receipts and disbursements
  - 3 As to correspondence between times and amounts of receipts and disbursements
- IV The rapidity of transportation of money
- V The state of expectations or anticipations of the community
  - 1 As to amounts of future income and prices of goods and services
  - 2 As to movements of the prices of income-yielding assets

The rapidity of circulation of money is greatly influenced by the state of development of the credit and financial system and by the community's readiness to use these facilities' If a society is without well-developed financial institutions or if the people are unwilling to use them extensively, as was the case in western Europe up to near the end of the Middle Ages and is still the

<sup>7</sup> For many of these points, see Irving Fisher, *The Purchasing Power of Money*, New York, 1926, pp. 79-89

case today in economically backward sections of the world, the velocity of money is likely to be low. In these circumstances the well-to-do are likely to hold a large proportion of their savings in the form of hoards instead of passing them along to borrowers or seekers of investment funds who would spend them. Moreover, the difficulty of borrowing quickly and easily in such a society encourages people to hoard money to meet contingencies. The velocity is usually greater in a society with a highly developed and confidence-commanding credit and financial system. Under these circumstances owners of excess funds are more disposed to lend or invest them and to hold securities rather than money as a store of value, and the knowledge that loans can be secured quickly when needed leads to less hoarding to meet future obligations. The increase in the number of financial institutions, which has made them easily accessible to a growing proportion of the people, and the enhanced differentiation of these institutions, which has adapted them to the needs of more and more types of lenders and seekers of funds, have been important factors in raising the secular trend of the velocity of money.

If a community is without a well-developed and widely used credit system, the velocity of its money is likely to be affected by the people's habits as to saving and consumption. If people save, they are likely to hoard money, thereby lowering its velocity. But if they consume most of their incomes, they are likely to hoard less.

Velocity is also affected by the system of payments used in the community. By this is meant the frequency, regularity, and correspondence between time and amounts of money receipts and disbursements. The greater the frequency of receipts and disbursements, the shorter is likely to be the average interval of rest of money and the higher its average velocity. This can be shown by an example. Suppose that a laborer receives each

week \$7 in wages and that he spends \$1 each day of the week. The average interval of rest of the money will be about half a week, or  $3\frac{1}{2}$  days. One dollar will be unused for 7 days, one for 6 days, one for 5 days, and so on. Those dollars that he unused for less than half a week will be balanced by those that lie unused longer. In this case, the average velocity of the money will be twice for the week, or about 8 for the month. But the average velocity is lower if income receipts occur less frequently and are spent at a uniform rate during the interval. Suppose that the laborer is paid \$30 once a month and that he spends \$1 each day. One dollar will be held idle for 30 days, one for 29 days, one for 28 days, and so on. The average interval of rest for this money will be 15 days, those dollars that lie idle for less than 15 days will be balanced by those that lie idle longer. In this case, the velocity of money is only twice for the month, as compared with the 8 per month in the case of weekly income receipts. A shortening of the interval between income receipts tends, therefore, to increase velocity.

(The velocity of money is also influenced by the degree of regularity of income receipts. If people receive relatively stable amounts of income at regular intervals, they are likely to feel free to spend most of it before the next income payment is due.) But if income is highly unstable in amount and irregular in occurrence, people feel a greater need to accumulate money holdings when income is plentiful to tide them over the lean periods. The consequent holding of idle money tends to lower the average velocity.

A third aspect of the system of payments that affects velocity is the extent to which the time and the amount of receipts and disbursements correspond, one with the other. If receipts and disbursements are so coordinated that money is paid away as soon as it is received, its velocity is greater than would be the case if some or all of it were held for a time before disburse-

ment The extent to which receipts and disbursements are co-ordinated in time is greatly influenced by the extent to which people buy on credit If they are in the habit of charging a large part of their purchases and of paying off their debts on payday or within a few days afterward, the velocity of money will tend to be higher than it would be if the community paid cash for most of its purchases and therefore had to hold more money during the interval between income receipts

A fourth determinant of velocity is the rapidity of transportation of money Any development that shortens the period between the time money leaves the payor and the time it reaches the payee makes it available for reexpenditure at an earlier date Thus, more rapid transportation of cash and speedier movement of checks from the maker to the receiver tend to enhance velocity

The four classes of determinants just described—which collectively may be called the stage of economic and financial development and the commercial habits of the community—determine the "norm" of velocity at any time, and changes in these factors determine the trend of velocity over long periods But velocities undergo wide variations around the "norm" in short periods, especially during inflation and deflation and the various phases of the business cycle These fluctuations are closely bound up with what has been variously called "business psychology," "the state of expectations," and the "state of anticipations" of the community

If for any reason or group of reasons—such as an expected expansion of the money supply, a revival of business activity, the election of highly popular public officials, or even what appears to be a groundless surge of optimism—the members of the community come to feel that incomes will be received more regularly and in increasing amounts and that prices will probably rise, the velocity of money is likely to be increased In the

face of such a bright outlook it is considered both unnecessary and unprofitable to hold large money balances. It appears more advantageous to spend money quickly before it loses its purchasing power and to hold goods and securities instead.

The situation is reversed, however, when large sections of the community come to feel that incomes and prices will not rise and that they are likely to fall. Such anticipations may be traceable to fears of one or more of many things, such as a decrease in the money supply, loss of foreign markets, a stock market crash, unfavorable legislation, labor disputes, or even what appears to be an unjustified pessimism. But whatever the origin of these gloomy anticipations, they are usually accompanied by a decline in velocity. Consumers postpone purchases of consumption goods, in so far as that is feasible, in order to take advantage of the expected lower prices later and to protect themselves against want during threatened rainy days, enterprisers tend to postpone purchases of capital equipment and raw materials for the same reasons and because prospective profits from production are not sufficiently enticing, and many possessors of investible funds consider it advantageous to hold their store of value in money rather than in securities which threaten to depreciate. The importance of these rises and falls of velocity accompanying the alternation of optimism and pessimism in the community will have to be emphasized later.

#### *T, THE PHYSICAL VOLUME OF TRADE*

It has been seen that the total volume of money expenditures in any period varies with  $M$  and  $V$ . The price level varies, however, not with the absolute volume of money expenditures but with the relationship between these expenditures and the physical volume of things to be purchased with money. Thus, the third immediate determinant of the value of money is the physi-

cal volume of trade to be effected with money The greater the quantity of things to be purchased with a given flow of money, the lower will be prices in general And conversely, the smaller the quantity of things to be purchased with a given flow of money, the higher will be prices in general

$T$  is the total physical volume of goods, services, and securities sold for money in a given area during a specified period of time Every article sold for money is included, and each article is counted every time it is sold<sup>8</sup>

It is impossible, at least in short compass, to explain fully the magnitude and behavior of the physical volume of trade Such an ambitious undertaking would necessarily involve a complete explanation of the economic system Nevertheless, it is worth while to consider a few of the most important determinants of  $T$

A large proportion of the trade during any period grows out of the production, transportation, and merchandising of currently produced goods, services, and securities The volume of trade in currently produced goods and services depends to some extent on productive capacity, and the productive capacity of a country depends in turn largely upon the quantity and quality of its factors of production—labor, natural resources, capital, and technical and managerial ability The larger the population — especially the working population—the better its health, and the greater its energy, the greater is likely to be the productive power of the country But productive capacity also depends upon the amount and richness of the natural resources on which

<sup>8</sup> To add together the physical quantities of such diverse things as securities, capital and consumption goods, and services of all sorts, it is necessary to have a common unit of physical measurement This common unit is "a dollar's worth in the base year," i.e., the amount of the article that would have sold for one dollar in the base year When the quantities of all goods, services, and securities are stated in terms of these units, they can be added together and the total volume of  $T$  thereby ascertained

TABLE 3.—FACTORS DETERMINING THE PHYSICAL VOLUME OF TRADE EFFECTED WITH MONEY

- I Factors determining the potential volume of current production of goods and services
  - 1 The size of the population, its health, energy, and philosophy
  - 2 The extent of territory and the richness of the natural resources
  - 3 The supply of capital equipment
  - 4 The state of knowledge as to techniques of production and administration
- II The extent of employment of the factors of production
- III The number of times that currently produced goods and services are exchanged for money
  - 1 The extent of specialization
  - 2 The business structure, the degree of business integration
- IV The volume of new security issues, and the number of times that they are sold for money
- V The volume of goods and securities carried over from earlier periods and the frequency with which they are sold
- VI The extent of barter

labor is employed, the supply of capital equipment available to assist labor, and the amount of available knowledge as to techniques of production and management

Unfortunately, however, the actual quantity of production is by no means always as great as the potential capacity. The actual volume most nearly approaches capacity in that stage of the business cycle known as prosperity. At such times business is profitable, and most of the factors of production are employed. But the situation is far different in depression periods when business is unprofitable. At such times much labor, capital equipment, and natural resources are either totally unemployed or worked less intensively than in prosperity periods. These

fluctuations in the degree of employment of the production factors explain, in large measure, the cyclical variations of  $T$

The volume of trade in currently produced goods and services depends, however, not only on the current volume of production, but also on the number of times that each unit of these goods and services is sold for money before being consumed. Two of the principal factors determining the number of times each good or service is sold are the extent of specialization and the structure of business. Greater specialization tends in two ways to expand the volume of trade. In the first place, as already indicated, it increases the supply of goods by developing per capita productivity. And in the second place, it increases trade by raising the average number of times each good is sold. If each family were self-sufficient economically, i.e., if specialization occurred only within each family, there would be no trade to be effected with money despite the fact that there was production. But if each family specialized in the production of an article which it did not consume, the total volume of production would enter into trade.

The number of times that each article is traded also varies with the degree of specialization of functions by business firms. If each of the functions of mining, manufacturing, jobbing, wholesaling, and retailing is carried on by a separate business firm, an article passing through these stages will be sold at least five times before it comes to rest in the hands of the consumer. But if all these functions are performed within one great integrated firm, each article may be sold only once—when it is sold to the consumer. It is for this reason that vertical combinations in industry may tend to reduce the volume of trade, though not of production.

Also included in  $T$  is the amount of trade in newly issued securities. This element of trade varies with the volume of new security issues and with the number of times the securities are

sold within the given period, whether for speculative or for other purposes

In addition to trade in currently produced goods, services, and securities, there is always trade in goods and securities produced and accumulated in earlier periods. The volume of trade in real estate, capital equipment, securities, and other assets carried over from earlier periods composes a sizable proportion of the total.

The last factor that will be mentioned as influencing the volume of trade to be effected by means of money is the extent of barter. Though often ignored, it is still of some importance in modern society. Articles are often "swapped," especially in rural regions where livestock bartering frequently occurs; land rents are often paid in shares of product; second-hand articles are given as partial payment for other second-hand or new articles; workers sometimes receive board and room as part of their wages; parcels of real estate are bartered for each other; corporation securities are exchanged for each other in cases of mergers and consolidations; and—perhaps most important of all—produce and securities are bartered through the clearing houses attached to organized produce and security exchanges.<sup>9</sup> The greater the proportion of trade that is effected by means of barter, the smaller is the proportion of trade that must be transacted by means of money. For this reason, the development and decline of barter tend, in themselves, to raise or lower prices.

#### P, THE GENERAL PRICE LEVEL

$P$  is the average price of each unit of  $T$  in a specified period. In somewhat more technical terms,  $P$  is the weighted arithmetic average of the individual prices of all goods, services, and securities sold at that price. It is "the general price level" in the broad-

<sup>9</sup> Cf. B. M. Anderson, *The Value of Money*, New York, 1917, pp. 196  
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est sense, for it includes the prices of everything sold for money

#### SUMMARY

The quantity theory states that there are three immediate determinants of the general level of prices,  $M$ ,  $V$ , and  $T$ . Each of these, in turn, depends upon a large number of underlying factors, so that the price level is influenced by the multitude of factors that work through  $M$ ,  $V$ , and  $T$ . It is just as important to note what the quantity theory does not state. It does not state that every change in  $P$  must originate with a change in  $M$ , or that  $P$  always and necessarily varies directly with  $M$  or even with  $\frac{M}{T}$ , or that each of  $M$ ,  $V$ , and  $T$  has its own peculiar determinants and is fixed independently of the other two. Changes in  $P$  may originate in factors behind any one or more of the immediate determinants, and some underlying developments influence all three of the immediate determinants simultaneously.

## CHAPTER III

### THE TRANSACTIONS TYPE OF QUANTITY THEORY APPLICATIONS

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#### INTRODUCTION

In describing the general nature of the quantity theory, the preceding chapter showed that the value of money is a resultant of the interactions of  $M$ ,  $V$ , and  $T$  and of their underlying determinants Variations in the value of money originate sometimes in  $M$ , sometimes in  $V$ , and sometimes in  $T$ , but most frequently they result from concomitant changes in all three There is no invariable sequence Moreover, a change originating in one factor in the equation of exchange often affects one or both of the others, for example, a change in  $M$  may lead to a change in  $V$ , and vice versa The quantity theory is fundamentally a tool of analysis—a logical framework on which to arrange facts secured by other means—and not a statement of some necessary and constant order of events

The purpose of this chapter is to use the quantity theory to analyze particular types of price problems Four cases will be considered The first two relate to the effects imputable to changes originating in the money supply The second two relate to explanations of actual movements of the price level

#### EFFECTS ATTRIBUTABLE TO CHANGES IN THE QUANTITY OF MONEY

General economic analysis is concerned in large part with tracing out the effects attributable to particular "causes" It at-

tempts to isolate and to analyze the effects that result from varying one factor in a given complex situation. Monetary theory sometimes utilizes this analytical technique of general economic theory to determine the effects, direct and indirect, of changes originating in the quantity of money. This approach must be employed by monetary authorities if they are to arrive at rational policies of quantitative control, and it is highly useful in explaining the effects of changes in the quantity of money arising out of increases or decreases in the amount of paper money, alterations of the gold content of the monetary unit, monetization and demonetization of silver, alteration of the reserve requirements of banks, and changes in the real costs of producing gold.

*Long-run Effects of Changes in M*—In the period preceding the World War, general economic theory dealt largely with long-run, rather than "short-run" or "transitional," phenomena. The theory shows, in effect, a comparison of "before and after" pictures—a contrast of static equilibria before and after the occurrence of a disturbing change. At that time it assumed full employment of the factors of production and either ignored transition periods or assumed that all necessary adjustments were consummated instantly. The pattern of monetary theory was much the same as that of general economic theory, it, too, was largely concerned with long-run causal effects, though it did not ignore the short run as much as did other branches of economics.

Most quantity theorists have held that the long-run effect of an increase or decrease in the money supply is to cause the price level to be proportionately high or lower than it would have been if the volume of money had not been altered. They do not contend that a given increase or decrease in  $M$  will necessarily be followed by an actual proportional rise or fall of  $P$ , such a movement may be prevented by changes in  $V$  or

$T$  that are in no way connected with the change in  $M$ . They contend merely that, in the long run, increases or decreases in  $M$  cause prices to be proportionally higher or lower than they would be if  $M$  were held constant.

This conclusion is based upon the contention that in the long run after all adjustments have been consummated (though certainly not in the transition period) the velocity of money and the physical volume of trade are determined by factors largely independent of the quantity of money. The velocity depends largely upon the more fundamental trends, such as the stage of development of the credit and financial system, the system of payments employed in the community, and the rapidity of transportation of money. Likewise, the physical volume of trade depends upon factors but little affected by the quantity of money—the size of the population, the supply of land and capital, knowledge of productive and administrative techniques, the organization of industry, and the extent of barter.

But though  $V$  and  $T$  are in the long run largely independent of  $M$ , they are not completely so. As will be seen in the next section, the effects of varying the money supply may be so serious and far-reaching as to influence permanently the productive capacity, the distribution of wealth and income, and the form and development of economic institutions. These changes are reflected to some extent in the long-run behavior of  $V$  and  $T$ , and therefore in  $P$ .

**Short-run or Transitional Effects of Changes in  $M$** —No competent quantity theorist contends, however, that variations in the money supply have exactly proportional or even roughly proportional effects on the price level in the short run. It has long been recognized that during the period of transition, changes in  $M$  exert important influences upon both  $V$  and  $T$ , so that prices are changed sometimes more and sometimes less.

than proportionally. The cases of increases and decreases in  $M$  will be considered separately.

If all money were issued by a central monetary authority, such as the Treasury or the central bank, it would be a relatively simple matter to effect any desired increase in the money supply. Even under our system, in which the money supply depends to such a great extent upon the lending and investing operations of commercial banks, it is not difficult to expand the money supply in periods of optimism. At such times the monetary authority need only supply the commercial banks with additional reserves, and the banks will expand their loans, investments, and deposits. But it is otherwise in periods of recession and depression, with their accompanying pessimism. An increase in bank reserves in such periods may not lead to an expansion of loans, investments, and deposits for a considerable time, for banks are less willing to incur the risks of lending and investing, and business men have less incentive to borrow. But a more liberal policy on the part of the monetary authority at least militates against further contraction and tends, by lowering interest rates and arousing more sanguine expectations, to hasten the expansion of money.

When an increase in the money supply does occur, the members of the community possess larger money balances than before. Assuming, as seems reasonable, that they had previously adjusted their money balances to the most advantageous level relative to their expenditures, the possessors of the increased balances will now feel that their money holdings are larger than necessary relative to their needs and that it is desirable to spend away the excess for consumption or for investment assets. It is possible that for a time expenditures will rise less rapidly than the quantity of money, for consumption practices are to some extent habitual and require time for their alteration, and the purchase of investment assets may be delayed. Nevertheless,

the pressure to increase expenditures is present Even if the average velocity of money is decreased for a time, and this need not always occur, the expansion of the money supply serves to unloose forces which sooner or later increase the velocity of money The rise in  $V$  may be small if  $M$  is expanded in an inconspicuous way or if the community believes that the aggregate rise of  $M$  will be relatively small But if the expansion of  $M$  is effected in a conspicuous way and especially if it is expected to be large,  $V$  usually rises quickly and far, for the belief is engendered that economic activity will be speeded up, employment increased, and prices raised Under these circumstances it is no longer advantageous to hold money so long before spending it When money incomes are expected to become larger and steadier it is not necessary to carry such large money balances as a contingency reserve An even stronger reason for spending them away and for holding other assets instead, is an expectation of price increases When prices are expected to rise, consumers are encouraged to anticipate their future needs in so far as this is feasible, enterprisers attempt to build up their fixed capital and their inventories of raw and finished materials, and owners of investment funds consider it profitable to exchange their money for stocks and other equities If the price rise is expected to be swift, velocity may be raised to many times its normal level

Thus, once the expansion is under way expenditures are likely to advance faster than the money supply It does not follow, however, that prices will be increased in proportion to the rise of expenditures, for this rise is likely to bring about an expansion in the physical volume of trade How great the increase in trade will be varies with many factors, the most important of which is the extent of unemployment of production factors at the time the increase in money is begun If the economy is operating far below its capacity, with large quantities of labor,

equipment, and land completely idle and others working on only a part-time basis, the resulting growth of production and trade may be great As expenditures for reproducible goods rise, individual producers experience a larger money demand for their products As demand goes up prices also rise to some extent, but each price rise is almost certain to be accompanied by greater output, unless—as rarely happens—cost schedules rise as rapidly as prices<sup>1</sup> Supply is usually highly elastic when unemployment is widespread, a small price rise is sufficient to elicit a relatively large expansion of output, for the marginal costs of increased output rise but slowly But as production approaches capacity levels, further increases of money demand result to a growing extent in higher prices and to a lessening extent in enhanced output, for marginal costs rise at an accelerating pace, rates of pay to the factors of production rise, recourse must be had to progressively inferior agents of production, workers must be paid at higher rates for overtime, the efficiency of workers and management may slacken, and in an increasing number of cases enhanced production necessitates the installation of new capital equipment

If, however, industry is already operating at near-capacity levels at the time  $M$  is expanded, the resulting rise in the physical volume of trade in currently produced goods and services is likely to be relatively small Production will be encouraged

<sup>1</sup> This explanation applies most properly to industries characterized by pure competition, or an approach to it, and in which each producer neglects the effect of his own production policy upon the price ruling in the market Under such conditions an increase in demand is almost certain to raise both prices and output In a general way the analysis also applies to industries characterized by monopoly or monopolistic competition, a larger demand usually increases both prices and output But price and production policies of those possessing a degree of monopoly power vary widely In some cases they pursue a policy of keeping prices relatively fixed and of allowing the increase in demand to exert its full effect on output In others the increase in demand is manifested largely in a rise in price and to only a slight extent in an expansion of output

to some extent, of course, some of the unemployed will be absorbed, some laborers will work overtime, efficient equipment will be utilized more intensively, and some inferior productive agents not worth employing in periods of stable prices will be pressed into use. But at such times higher money demand is likely to be manifested largely in enhanced prices.

The foregoing discussion relates to trade in currently produced goods and services, there remains trade in securities and in goods carried over from earlier periods. This, too, is likely to be expanded by rising money expenditures. Especially large is likely to be the growth of speculative trade in securities, commodities listed on the organized produce exchanges, and real estate.

The general conclusion must be, then, that in the transition period an induced increase in the money supply serves to enhance the velocity of money, the physical volume of trade, and prices. Whether the resulting price rise will be in proportion to the money increase or will be more or less than in proportion depends upon the relative movements of  $V$  and  $T$ . If both rise at the same rate,  $P$  and  $M$  move proportionally. If  $V$  rises faster than  $T$ ,  $P$  rises faster than  $M$ . If  $V$  rises more slowly than  $T$ ,  $P$  rises more slowly than  $M$ . Just what the relative rates of change of  $V$  and  $T$  will be cannot be predicted in advance without a knowledge of conditions existing at the time, moreover, these relative rates of change are likely to vary at different stages within the same transition period. Early in the transition period  $T$  may easily rise faster than  $V$ , especially if the expansion is initiated at a time of widespread unemployment. Then later, as production approaches capacity levels,  $V$  may rise faster, perhaps very much faster, than  $T$ . This shift in the relative rates of acceleration of  $V$  and  $T$  goes far toward explaining why prices may at first move only slowly and then at an ever faster rate during protracted inflations.

Even in those cases in which the rise of the general price level is initiated by an enlargement in the quantity of money, all individual prices are not affected uniformly. Some respond quickly and advance rapidly, while others respond only after a delay and advance slowly, and the more rapid the rise of the price level the greater, in general, is the dispersion of individual prices. Of the many reasons for this a few of the most important will be noted.<sup>2</sup>

Though most prices are legally free to move, some are fixed for more or less extended periods by government regulation or by contracts. The principal prices regulated by government are court fees, postage, tolls, public utility rates, and transportation rates on common carriers. The list is being extended rapidly, however. Prices fixed by contract cover a wide area, but the most important are probably interest payments on securities, rentals of land, buildings, and durable equipment, and to a lesser extent salaries.

Even those prices which are legally free to vary show quite different patterns of behavior, owing to variations in both demand and supply. The increase in money demand is not felt simultaneously and proportionally by all objects of expenditure. In the first place, the new money is injected at particular points in the system, and the effects are felt there first. In the second place, the expansion is likely to bring about a redistribution of wealth and income which will alter the spending patterns of the community as a whole. And in the third place, an individual receiving a larger money income is not likely to allocate the increment proportionally among the things he has been buying; instead, he will probably increase the proportion spent on luxuries and made available for the purchase of capital goods.

<sup>2</sup> For a discussion of some of these factors, see Irving Fisher, *The Purchasing Power of Money*, New York, 1926, Chapter IX, pp. 184-197.

This is especially likely to occur before the cost of living rises as much as money incomes

The response of prices is also influenced by conditions of supply. A larger demand for goods whose supply cannot be increased is manifested in higher prices, and a larger demand for reproducible goods is usually manifested in expansion of both price and the amount produced. But the relative rates of change in the prices and production of reproducible goods vary considerably from case to case. Some of the most important reasons for this nonuniformity of response are differences in the degree of competition and monopoly in the various industries, in price and production policies followed by firms with monopoly power, in the rapidity of rise of costs and especially of wage rates, in the amount of excess capacity in the various industries at the time the expansion is initiated, and in the ease or difficulty of enlarging capacity where that is necessary.

Just as an increase in the money supply can, during the transition period, raise velocity, expenditures, and the physical volume of trade and can lead to "boom" conditions, a decrease in the money supply can reduce velocity, expenditures, and the physical volume of trade and can bring about business recession and depression.<sup>3</sup>

A lowering of  $M$  means that on the whole the members of the community have smaller money balances than before. If the persons or firms suffering the decrease in money holdings attempt to maintain their expenditures at the old level, their balances are lower than before in relation to their expenditures, and they will be likely to feel "short of money" and to attempt to repair their cash position by curtailing ex-

<sup>3</sup> It is not contended, however, that increases or decreases in the money supply are the only factors that can bring about "boom" or depression conditions.

penditures For a time expenditures may not decrease as rapidly as  $M$ , for they are to some extent habitual Nevertheless, the pressure toward a decrease is present But even if expenditures fail for a time to fall as fast as  $M$ , and such a period need not always intervene, they are likely later to fall faster than  $M$ ,  $V$  is likely to be lowered If the decrease in  $M$  is expected to be small,  $V$  may be lowered but little, but if it is expected to be rapid and prolonged,  $V$  may drop considerably, for the actual and expected decreases in the money supply arouse fears that employment, money incomes, and prices will decline As they begin to fear that their money incomes will diminish and probably become more irregular, members of the community attempt to accumulate larger money balances as a protection against future need To do this they reduce their expenditures, or offer goods and securities for sale on more favorable terms, or both This tendency to hold money to a greater extent as a store of value—often referred to as “a flight to money”—is reinforced by a belief that prices of goods, services, and securities will decline

Thus, once the contraction is under way, expenditures usually decline faster than the money supply Prices do not fall in proportion to expenditures, however, for the physical volume of trade is diminished To enterprisers the falling off of expenditures for reproducible goods appears as a smaller money demand for their products As demand is lowered, prices also drop to some extent, and each price decline is accompanied by a contraction of output, unless—as is highly unlikely—cost schedules fall as rapidly as prices<sup>4</sup> To the reduction of trade

<sup>4</sup> Here, again, the explanation applies most properly to industries in which conditions approaching pure competition obtain, though it also applies in a general way to industries in which individual firms have some degree of monopoly power Even under the latter conditions decreases in money demand are likely to lead to decreases in both prices and output Price and production policies vary widely, however In some cases firms with monopoly power maintain prices and permit the reduction of money

in currently produced goods and services there is usually added a reduction of trade in goods and securities accumulated in earlier periods. Especially large is likely to be the decline of speculative trade in securities, in commodities listed on the organized exchanges, and in real estate.

Thus, in the short run a decrease in the money supply affects not only prices but also the velocity of money and the physical volume of trade. Whether prices are lowered in proportion or more or less than in proportion to the decrease in the money supply depends upon the relative magnitudes of change of velocity and of the physical volume of trade.

In this case, as in the case of an increase in the money supply, individual prices behave in markedly different ways. Some fall quickly and rapidly, and others fall only after a long delay and then but slowly. The factors responsible for this lack of uniformity have already been outlined.<sup>5</sup>

#### ACTUAL MOVEMENTS OF THE PRICE LEVEL

It is to be emphasized that the discussion in the preceding section related solely to the effects imputable to changes originating in the money supply. It made no pretense of explaining all actual movements of prices. The purpose of the present section is to indicate the type of analysis that must be used to explain the actual behavior of the price level over the long-term and during the different phases of the business cycle.

**The Long-Term Trend of Prices**—The long-term trend of prices depends, of course, upon the relative movements of  $M$ ,  $V$ , and  $T$ , which in turn are the resultants of the many long-term forces operating upon them.

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demand to be manifested completely, or almost so, in decreased output. In others, the decrease in money demand is manifested largely in lower prices and to but a small degree in reduced output.

<sup>5</sup>Cf p 53

In all except very mature and economically stagnant nations,  $T$  shows an upward long-term trend. The growth of population, the extension of territory in use, inventions and wider knowledge, more rapid and cheaper transportation, intensification of specialization—all make for increased productivity. And trade in currently produced goods and services tends to rise faster than production, owing to greater specialization among business firms which serves to increase the number of times each good or service is sold before it finally comes to rest. The volume of trade in accumulated wealth and securities also shows an upward trend in an economically progressive society. In fact, in an expanding economy there are only two developments that have a tendency in the long run to decrease  $T$ . One is the trend toward vertical integration of business firms which tends to reduce the number of times each good is sold on its way to the final purchaser. The other is the growth of clearing or barter systems, such as those used by organized security and commodity exchanges. The combined power of these developments is usually so weak, however, that at most it merely retards  $T$ 's rate of increase. This long-run rise of  $T$  must bring about a downward long-term trend of prices if it is not accompanied by an offsetting rise in money expenditures.

For several reasons,  $V$  also tends to show an upward long-term trend in a growing economy. In the first place, credit and financial institutions become more highly developed and more widely used, so that securities and other investment assets more often take the place of money as a store of value. In the second place, the growth of population—and especially its increased industrialization and urbanization—is likely to alter the system of payments in such a way as to raise velocity. Receipts and disbursements tend to be made at shorter and probably more regular intervals, and the times of receipt and disbursement tend to correspond more closely, owing to the

increasing proportion of sales on credit In the third place, the greater density of population and speed of communication and transportation serve to shorten the time required for money to journey from payor to payee

The quantity of money may either rise or fall over long periods, depending on the behavior of the size of the monetary base, the community's choice as to the relative proportions of its money that it will hold in the form of cash and of checking deposits, and the ratio between bank reserves and deposits More often than not, however, the long-term movement of the money supply is upward, though the rate of rise varies greatly The monetary base usually expands, because of the accumulation of monetary gold, the issuance of other types of government coins and paper money, and the increase in central bank credit outstanding Over long periods the community usually displays a growing preference for holding checking deposits rather than cash In some periods the ratio of reserves to deposits falls, owing either to reductions of legal reserve requirements or to a belief among bankers that such large reserves relative to deposits are no longer necessary All these developments, if they occur, are conducive to a larger money supply But there have been fairly long periods in which the money supply actually declined In most cases this has been traceable to a shrinkage of the monetary base induced by gold exports, a retirement of paper money and coins, or a contraction of central bank credit A lessening of the money supply may be induced or aggravated, however, by an increase in the ratio between bank reserves and deposits In the past, this usually occurred as wildcat and unsound banks were displaced by banks operated on safer principles

In summary, the behavior of  $P$  over long periods depends upon the relative rates of change of  $M$ ,  $V$ , and  $T$  as determined by relevant long-term factors If  $MV$  rises faster than  $T$ ,  $P$

'shows an upward secular trend If  $MV$  rises less rapidly than  $T$ ,  $P$  shows a downward secular trend As to the actual rates of change of these factors in different periods, few a priori generalizations are possible In an expanding economy both  $V$  and  $T$  are almost certain to show a secular rise, though it would be only a coincidence if both went up at the same rate More often than not,  $M$  also shows an upward long-term trend, but the rate of rise varies greatly, and periods of decline are not unknown

**Cyclical Movements of Prices**—In addition to their long-term trends, price levels undergo marked fluctuations during the phases of the business cycle These fluctuations are also a resultant of the changes in  $M$ ,  $V$ , and  $T$ , but they are dominated by short-term cyclical factors rather than by factors determining long-term trends To explain why  $M$ ,  $V$ , and  $T$  behave as they do in the course of the business cycle would necessitate a complete explanation of the business cycle itself This cannot be attempted in this chapter, though more light will be thrown on the matter later<sup>6</sup> We must confine ourselves here to a description of the monetary aspects of the cumulative downswing and upswing and leave largely unexplored the reasons why business at one time ceases to rise and begins a cumulative fall and at another time ceases to fall and begins a cumulative rise The downswing will be discussed first

The outstanding characteristics of the cyclical downswing are cumulative declines in actual and expected profits, employment, production, real income, and prices These phenomena are manifested in the equation of exchange as declines in  $M$ ,  $V$ ,  $T$ , and  $P$

The money supply, affected as it is by so many factors, behaves differently in different recessions and in different countries, but in such periods it is always subjected to powerful

<sup>6</sup> Cf Chapters VI and VII

downward pressures Most of these bear upon the volume of checking deposits As prospects for profits fall faster than interest rates or even vanish completely, business men decrease their demand for bank loans, and banks attempt to recall loans extended to borrowers whose credit standing is becoming questionable This decline in loans could be offset, of course, by an increase in bank investments, but banks often fail to follow this policy, and for a number of reasons They may believe that commercial banks do not properly load their portfolios heavily with long-term securities, they may fear that investments will fall in value, they may anticipate unfavorable clearing-house balances, or they may fear runs by depositors In most countries, and especially in the United States where the failure record is high and banks have good reason to fear runs, these pressures have been sufficient to produce sizable declines in checking deposits and the money supply Such decreases in the quantity of money may be prevented in the future if banks become accustomed to enlarging their holdings of long-term investments, if the public ceases to distrust the safety of banks, and if the monetary authorities follow a policy of supplying banks with sufficient excess reserves to put them in a highly liquid condition without the liquidation of loans and investments If such declines in the money supply are prevented, the intensity of depressions will probably be lessened somewhat

An invariable characteristic of the downswing is a lowering of the velocity of money As fear of falling profits, employment, income, and prices spreads through the community, people postpone expenditures and hold money longer Consumers delay spending and conserve their money, both to protect themselves against want in the dark days ahead and to enable themselves to profit by the expected fall in prices Enterprisers hold money and postpone purchases of durable equipment and raw materials because they expect to be able to buy them more

cheaply later and because of their pessimism as to the future demand for their output Financial institutions and owners of investible funds also tend to hold money rather than securities and other investment assets on which the risk of loss is considered great

The reduction of expenditures traceable to the declines of  $M$  and  $V$  is manifested partly in a decrease in  $P$  and partly in a decrease in  $T$  Trade in goods and securities accumulated in earlier periods—and particularly speculative trade—drops, as does also trade in goods and services currently produced To the individual producer the reduction of expenditures appears as a lowered demand for his product This lowered demand leads to a decrease in price and therefore to a decrease in output, for cost schedules do not fall so rapidly as prices<sup>7</sup>

The behavior of the money demand for various kinds of goods and services varies widely, however The community does not distribute the decrease in its demand proportionately among all the things it has been buying Instead it maintains its demand for some things almost intact while it ceases almost entirely its purchases of others The most striking contrast in behavior is that between the demand for durable producers' goods and non-durable consumers' goods, though the behavior of demand for individual articles within each class varies considerably

In general, the demand for consumers' goods declines less than does that for producers' goods Within the class of consumers' goods, the demand for goods and services that are of a temporary nature and that are regarded by their purchasers as necessities usually declines least Here are included such things as staple foods, household fuel, light, shelter, and those things necessary for the maintenance of one's group status The need felt for these things is most urgent and their purchase is least postponable The decrease in demand for consumers' goods of a durable or frankly luxury type is likely to

<sup>7</sup> For a caution as to the use of this analysis, see footnote 4 on p 55

be greater Under this head are included such things as pleasure automobiles, furniture, clothing that is highly durable or whose main purpose is conspicuous waste, liquor, travel, and expensive entertainment Luxuries, except perhaps those of very inex-

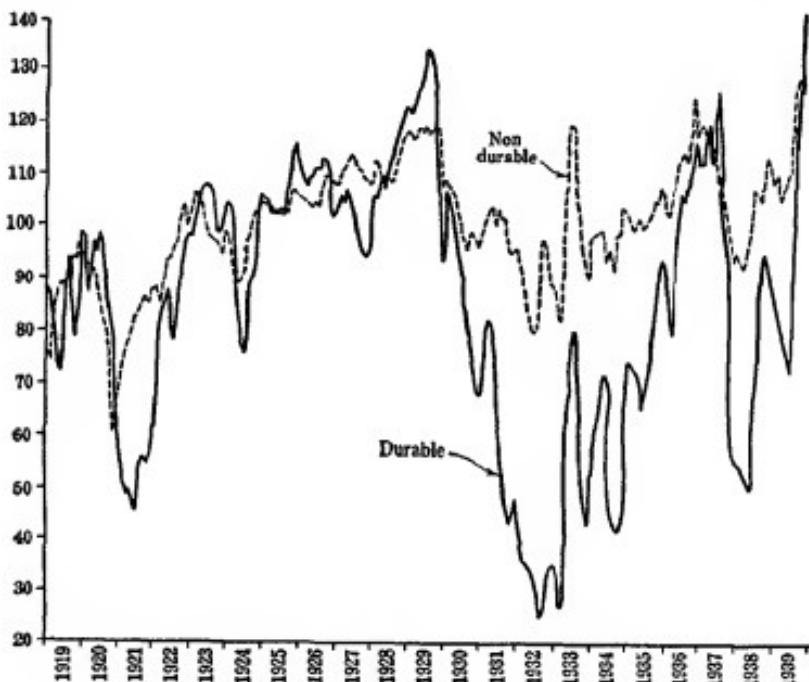


CHART IV—Indexes of the Manufacture of Durable and Non-durable Goods in the United States, 1919-1939, Adjusted for Seasonal Variations (Monthly average of 1923-1925 = 100 )

Durable manufactures include iron and steel, coke, non ferrous metals, lumber, cement, polished plate glass, automobiles, locomotives, and shipbuilding Non durable manufactures include textiles, leather products, food products, tobacco products, paper and printing, petroleum refining, and rubber tires and tubes (Source of data, Board of Governors of the Federal Reserve System )

pensive types, are likely to be sacrificed to more urgent needs, and purchases of durable goods can be postponed to more prosperous times Many a family has discovered in depressed periods that the simple way of life is after all not only the more

virtuous but also the happier, that the old car is still quite serviceable and really more dignified than the gaudy new models, that a cleaning and pressing will make the old topcoat as good as new, and that the old furniture has a look of mellowness and comfort not possessed by that currently in vogue Demand is also likely to shift from higher to lower quality goods

The demand for durable producers' goods suffers the greatest decline of all. The sharpness of this drop arises out of the nature of these goods they do not enter directly into consumption, but instead are used directly or indirectly to produce consumption goods.<sup>8</sup> They are demanded, therefore, only when the prospective need for their product—consumers' goods—is such as to make their use profitable. A given decline in the demand for a consumers' good is likely to bring about a magnified decline in the demand for the producers' goods used in its production. Under some conditions, even a lower rate of increase in the demand for consumers' goods is sufficient to effect an absolute diminution of the demand for the relevant producers' goods.

Producers' goods are demanded in any industry for one of three purposes, (1) to increase total productive capacity in order to satisfy an expected increase in the demand for its output, (2) to replace equipment being worn out, and (3) to replace obsolete or obsolescent equipment with more efficient types. In periods of downswing demand for all of these purposes falls. As the demand for the end product—consumption goods—not only ceases to increase as it did during the preceding period of prosperity but actually shrinks, existing productive capacity becomes not only sufficient but even redundant, so that the necessity for new equipment with which to expand total productive capacity is likely to disappear. Orders for capi-

<sup>8</sup> Some producers' goods are used directly to produce consumption goods, others are used to produce producers' goods which are, in turn, used to produce consumption goods, and so on. In general, the more remote the stage, the greater is the fluctuation of demand.

tal replacements are also likely to fall, owing both to the decreased wear and tear on machinery as a result of shrunken operations and to the fact that many firms can satisfy the reduced demand for their products without replacing depreciating equipment. Moreover, enterprisers hesitate in periods of downswing to replace old types of machinery with new, for such changes are often considered profitable only if the new equipment can be utilized steadily—the very condition not existing in depression periods. Some enterprisers may, of course, ignore the depressed demand of the present and the immediate future and purchase additional producers' goods in anticipation of a remote increase in demand, but such enterprisers are in the minority.<sup>9</sup>

The varying behavior of the money demand for various types of goods and services helps to explain the differences in the behavior of the prices and output of those things in depressed periods. But industries react differently to a given decrease in money demand. At one extreme the smaller demand leaves prices unaffected and manifests itself solely in shrunken output; at the other it leaves output virtually intact and shows itself in tumbling prices. Just what the reaction will be in any given case depends upon a number of factors, among which are the extent of monopoly and price competition in the industry and the price policies followed if monopolistic elements are present, the rapidity of adaptation of wages and other costs, and the distribution of costs between the categories of fixed and variable costs.

Events during the upswing are, in general, the reverse of those just described. This period includes the phases of recovery and prosperity and extends from the point at which revival begins to the point at which the crisis ushers in a new recession. In general, its outstanding characteristics are

<sup>9</sup> The behavior of investment will be discussed further in Chapter VII.

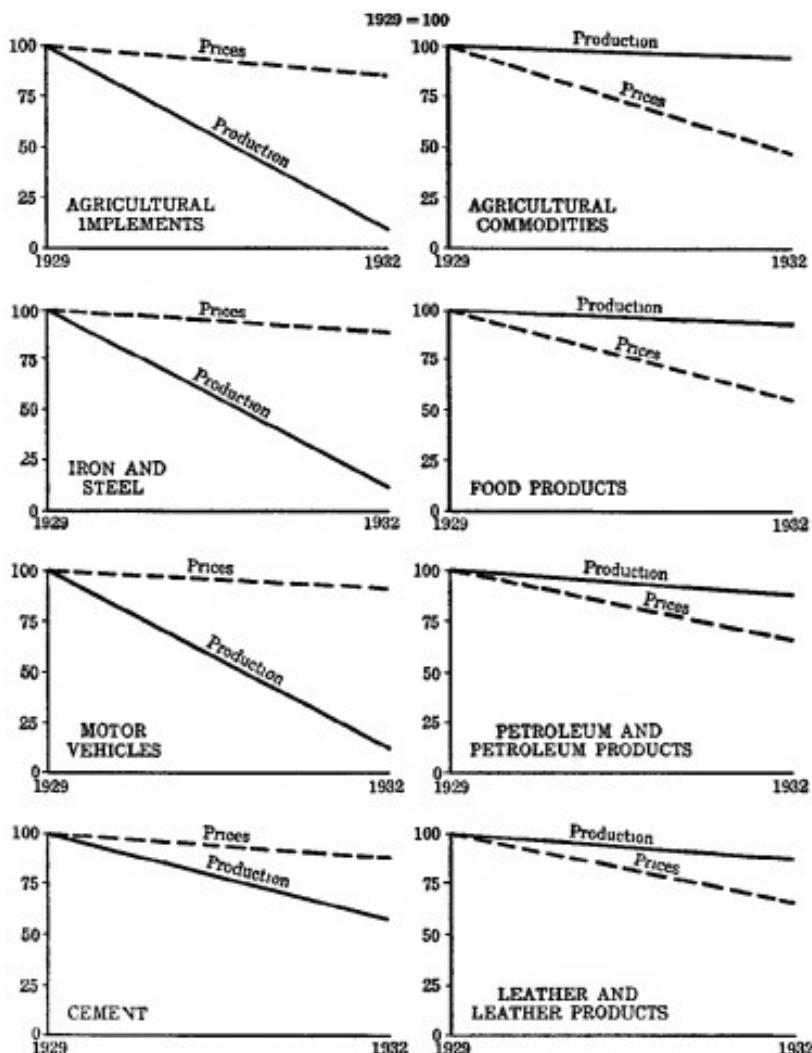


CHART V—Comparison of Price Changes and Production Changes of Selected Classes of Commodities During Depression, 1929-1932

The charts were constructed by connecting the index numbers for 1929 with those of 1932, the intervening statistics being ignored. It would therefore be a mistake to infer that the actual declines could be faithfully represented by a straight-line curve. (Source of data, National Resources Board, *The Structure of American Industry*, Part I, 1939, p. 386.)

the opposite of those during the downswing—rising current and expected profits, employment and real income, and an optimistic anticipation that the betterment will continue. These phenomena appear in the equation of exchange as increases in  $M$ ,  $V$ ,  $T$ , and  $P$ .

The money supply is subjected to a powerful upward pull during the upward phase of the cycle, owing to the pressure upon banks to expand their credit. As prospective profits to be gained through the use of funds in "legitimate" business and speculation rise faster than rates of interest, enterprisers increase their demand for bank loans. And the bankers, sharing the general optimism as to business activity, credit-worthiness, and prices, usually satisfy these demands up to the limit of their ability. If not prevented by a stern and restrictive monetary policy from doing so, the banks are even likely to attempt to expand their lending power by borrowing from the central bank. In the past these influences have been strong enough in the upswing to elicit sizable increases in the money supply. Such increases may in the future be prevented, however, if monetary authorities adopt a sufficiently courageous policy of restriction. If this is done booms will probably be prevented from reaching such heights.

The upswing of business is invariably accompanied by a higher velocity of money. As members of the community adopt more and more optimistic views of the future of employment, incomes, profits, and prices, they enlarge their expenditures and decrease the extent to which they hold money as a store of value. Consumers, expecting ever-steadier employment and rising incomes, feel safer in spending most of their current incomes and in reducing their money holdings to a minimum. This tendency toward more rapid spending is greatly reinforced if prices are expected to rise. Enterprisers, anticipating a growing demand for their products and fearing higher prices

of raw materials and capital equipment, are impelled to purchase quickly not only to meet their expanded current needs, but perhaps also to enlarge their inventories in anticipation of future requirements Financial institutions and individual owners of investible funds, imbued with a belief that securities and other investment assets will not fall and will probably rise in price, draw down their money hoards and hold these income-yielding assets instead

The increase in expenditures traceable to the rise of both  $M$  and  $V$  exerts a part of its effects on  $T$  and a part on  $P$ . To some extent the rise of  $T$  represents increased trade, particularly speculative trade, in goods, services, and securities accumulated in earlier periods. To a greater extent, however, it represents an enhancement of trade in currently produced goods and services. The expenditure rise is felt by individual producers as a larger demand for their products. The larger demand leads to higher prices and therefore to a rise in output.<sup>10</sup> In the early stages of recovery, when unemployment of labor and capital is still widespread, the increase in demand is likely to be evidenced to a large extent in greater output and to a smaller extent in higher prices. But as recovery proceeds and unemployment shrinks, the obstacles to expansion of output become greater and the rise of demand is evidenced more and more in prices.<sup>11</sup>

Though the above description indicates the general pattern of events in the upward phase of the cycle, the behavior of output and prices varies widely among different industries, owing to differences in conditions of both demand and supply. As money demand rises in the upswing, it does not distribute itself proportionally among all types of output. In general, the demand for consumption goods increases by a smaller propor-

<sup>10</sup> Cf. the caution as to this analysis in the footnote on p. 51.

<sup>11</sup> The analysis of p. 51 is also applicable to the boom period.

tion than does that for producers' goods, though there are wide variations in the behavior of demand for individual goods within each class. Within the class of consumers' goods, necessities of non-durable type—whose demand was most nearly sustained during the downswing—are likely to enjoy the smallest increase in demand, though as people become more prosperous they tend to shift to higher-quality necessities. The demand for consumers' goods in the luxury and durable classes is augmented to a greater extent. People who were forced, during the depression, to forgo the consumption of luxuries now feel able to gratify their long-felt hunger for these articles. They are also in a position to replace their worn and out-of-date durable goods, such as automobiles, furniture, and durable clothing.

The demand for durable producers' goods enjoys the greatest expansion of all. As the call for consumption goods rises and is expected to continue to rise, existing productive capacity is considered too small. Enterprisers therefore purchase repairs and replacements for equipment worn out and neglected during the downswing and buy additional equipment to meet the current and expected increases in the demand for their output. Imbued with high hopes of steady operation, they are also likely to replace obsolete and obsolescent equipment with newer types invented but not exploited during the depression. The whole process is speeded up if enterprisers expect the price of capital goods to rise. The funds with which to purchase this increased volume of capital goods come from three sources: from the greater volume of voluntary savings made available as the social income rises and as a larger proportion of it is saved, from money hoarded during the preceding depression, and from the new money created by the banking system through the extension of its loans and investments. The producers' goods

industries, which were the paupers of the depression, become the princes of the boom

But not all the dissimilarities in the behavior of output and prices are attributable to differences in the rates of increase of demand. Various industries react differently to a given increase in demand. At one extreme the greater demand leaves prices unaffected and manifests itself solely in greater output; at the other, output is virtually unaffected and the rise is manifested almost completely in higher prices. In each case the relative rates of change of output depend on the many factors mentioned earlier—the extent of competition and monopoly in the industry and the price policies followed if monopolistic elements are present, the rate of increase of labor and other costs, and whether costs are largely fixed or variable in nature.

In summary, the upward phase of the cycle is characterized by increases in  $M$ ,  $V$ , and  $T$ .  $MV$  usually goes up more than  $T$ , so that  $P$  also rises. Until recently it was believed that a boom could occur only if  $P$  rose, but now it is recognized that it is possible for a business boom to occur in the face of stable or even slightly declining prices. This can happen, however, only if a rapid advance in productive efficiency lowers unit costs so much as to permit the emergence of an abnormally wide profit margin between the falling costs and the stable or more slowly declining selling prices. Wholesale prices showed a very slow downward drift during the prosperity period terminating in 1929. However, the general price level, including the prices of everything purchased with money, rose.

#### A CRITICISM OF THE QUANTITY THEORY OF THE TRANSACTIONS TYPE

One of the principal criticisms that has been directed against the quantity theory of the transactions type is that the price level ( $P$ ) to which it leads is so comprehensive as to be only

a "hotchpotch" and to lack significance. There can be no question as to the inclusiveness of  $P$ . It includes the prices of everything included in  $T$ , which covers everything sold for money old and new goods of every type, services of all kinds, including labor, and securities of every description. It is difficult to conceive of any problem for whose solution a price index which averages together wages and the prices of all goods and financial instruments would be the most useful. For analytical purposes the superior usefulness of index numbers that are somewhat less inclusive and more homogeneous in content must be conceded.

Nevertheless, the shortcomings of  $P$  as an index number must not be allowed to reflect unfavorably upon the usefulness and validity of the transactions type of quantity theory as a medium for explaining the purchasing power of money over any broad category of things.  $M$ ,  $V$ , and  $T$  must be considered in an adequate explanation of the movements of any index number, even if it is far less inclusive than  $P$ . For example, even if it is desired to explain the movements of only the prices of currently produced goods and services, consideration must be given to the other components of  $T$ , for an increase of trade in securities or in previously produced durable goods may absorb expenditures and diminish them for current output. Or a decline of trade in securities and previously produced goods may release expenditures to current output. In a very real sense every article entering into trade is a competitor for expenditures, and the price level of any large class of articles cannot be explained if any of the competing demands for expenditures is ignored.<sup>12</sup>

Fortunately, the quantity theory can be rescued from this criticism by breaking down the price level,  $P$ , into its component

<sup>12</sup> For an excellent evaluation of the contention that the transactions type of quantity theory should be discarded because it leads to a "hotchpotch" price level, see A. W. Marget, *The Theory of Prices*, New York, 1938, Vol. I, pp. 484-600.

parts The equation of exchange, which has been written as  $MV = PT$ , may also be expressed as  $MV = p_1t_1 + p_2t_2 + p_3t_3 + \dots + p_nt_n$ . In this equation,  $t_1$  is the physical volume of trade in some selected class of goods, services, or securities, and  $p_1$  is the price level of this class of things.  $t_2$  is the physical volume of trade in a second class of things, and  $p_2$  is the price level of these things. And so on (until  $T$  has been divided into as many classes as are desired, each with its own price level). By this process  $P$  is resolved into the less inclusive indexes of which it is an average. For example, subsidiary price indexes can be constructed for consumers' goods currently produced, producers' goods currently produced, wage rates, rentals, common stocks, and so on. As to the usefulness of these indexes there can be no question.

#### THE QUANTITY THEORY APPROACH APPLIED TO THE VOLUME AND PRICE LEVEL OF CURRENT OUTPUT

It is convenient at this point to note briefly another aspect of the quantity theory that is similar in form but less inclusive in content than the transactions type just discussed. This might be called the income type of quantity theory, for it is concerned primarily with the interrelationships of money and the volume and prices of finished goods currently produced; it deals with the trade in and prices of securities and goods produced in earlier periods only in so far as these bear upon current output. Those who utilize this approach claim superiority for it on the ground that it deals with the key prices in the economic system—the prices of finished current output. If these are sufficiently high relative to costs, prosperity will obtain, but if they are low relative to costs economic stagnation will occur.

This form of the theory will be presented here only in outline, partly because of its similarity in form and content to the type of quantity theory already discussed at length, and partly

because the factors with which it deals will be studied in detail in Chapter VI in connection with the income and expenditure approach

It is only a truism that the value of the current output of finished goods sold for money in any period is equal to the value of the money paid for those goods A closer analysis, however, shows that the quantity of money expenditures for the goods varies with the quantity of money and the number of times each unit of that money is spent for these goods during the specified period And the value of the goods varies with the physical volume of them sold and with their average price per unit This may be stated in terms of an equation of exchange as  $MX = Op$ , or as  $\frac{MX}{O} = p$  In this equation,  $M$  is the average amount of money (cash and checking deposits) in circulation during the period It is identical with the  $M$  discussed earlier  $X$  is the average number of times each unit of  $M$  is spent for the current output of finished goods during the period  $X$  is often called the circuit velocity of money and is to be distinguished from the transactions velocity ( $V$ ) already discussed As will be seen,  $X$  is always smaller than  $V$  and need not vary directly with it  $O$  is the physical quantity of current output of finished goods sold for money during the period It is composed of two general classes of goods (1) consumers' goods, and (2) producers' goods The average price per unit of  $O$  sold for money in the period is indicated by  $p$

This form of the theory, like the one preceding, is enlightening only if one analyzes the factors behind the equation of exchange The behavior of  $M$  and the determinants of its magnitude and fluctuations have already been discussed  $X$ , the circuit velocity of money, requires some explanation It is not the same as  $V$ , it is necessarily smaller, for  $V$  includes every spending of  $M$  included in  $X$  and in addition every expenditure of  $M$  for securities, for goods produced in preceding periods,

and for goods sold between different stages of the productive process on the way to their ultimate buyers. The variations of  $V$  and  $X$  usually display some similarities, in periods when members of the community attempt to increase their "hoards" of money, both  $V$  and  $X$  are likely to fall, just as both are likely to rise when the members of the community attempt to "dishoard." But the variations of the two are by no means perfectly correlated. Changes in the speed of spending for securities—especially in speculative transactions—for goods previously produced, and for goods sold between the stages of production may not be accompanied by parallel movements of  $X$ . In fact, increased spendings for these things may even occur at the expense of  $X$ , as people delay or forgo purchases of currently produced goods in order to finance other types of transactions. A "vertical dis-integration" of business firms is especially likely to decrease  $X$ ; money is likely to "make the circuit" less quickly if the functions of producing the raw materials, of manufacturing, of wholesaling, and of retailing are carried on by separate business units than it will if all or several of these functions are performed within one business unit.

The determinants of  $O$ , the physical volume of finished current output sold for money in the period, were noted in Chapter II.<sup>13</sup>  $O$  is affected by anything that influences the productive capacity of the economy, the intensity of the use of the productive capacity, and the proportion of output that is offered for sale for money.

In light of the more detailed discussion in Chapter VI, it is sufficient to note here that changes in  $p$  are a resultant of the movements of  $M$ ,  $X$ , and  $O$ . When  $MX$  rises faster than  $O$ ,  $p$  rises. But when  $MX$  falls faster or rises more slowly than  $O$ ,  $p$  falls. And changes may originate in any one or more of the factors.

<sup>13</sup> Cf. pp. 41-42.

## CHAPTER IV

### THE CASH-BALANCE TYPE OF QUANTITY THEORY

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#### INTRODUCTION

The transactions type of quantity theory described in Chapters II and III has enjoyed its greatest popularity in the United States, though it originated abroad and still has many adherents there. In Europe however, and particularly in England, many economists prefer to use the cash-balance type of quantity theory. It must be emphasized that there is no fundamental conflict between these two types. Outstanding proponents of each have insisted that both the theories themselves and the equations by means of which they are presented are interchangeable. Differences of opinion arise only as to the relative fruitfulness of the two types of analysis. Advocates of the cash-balance approach claim superiority for their scheme on two counts: (1) It is stated in terms of supply and demand, thereby facilitating the integration of monetary theory with general value theory; (2) It more clearly relates the process of determining the value of money to the subjective valuations of individuals, which are the motivating force behind all economic activity.

#### ESSENTIALS OF THE CASH-BALANCE APPROACH

According to this method of analysis, the value of money depends upon the supply of money and the demand for it. The value at any time is fixed at that level which equalizes supply and demand, and its variations through time are out-

of changes in either its supply, or its demand, or both<sup>1</sup> If the supply is increased without an offsetting increase in demand, or if the demand is decreased without an offsetting decrease in supply, the value of money must fall, prices must rise. But if the supply is decreased without an offsetting decrease in demand, or if the demand is increased without a corresponding increase in supply, the value of money must rise, prices must fall. These familiar propositions of general value theory represent only the naked outline of the cash-balance approach. To clothe the theory with meaning and to render it useful in explaining real phenomena, it is necessary to analyze the nature of the supply of and demand for money and to ascertain the determinants of their behavior.

### THE SUPPLY OF MONEY

Since it was discussed at some length in the two preceding chapters, the supply of money may be passed over quickly here. It is sufficient to note that it is composed of all the cash and checking deposits in the hands of the public.<sup>2</sup>

### THE DEMAND FOR MONEY

The demand for money within a specified area at a given time is merely the sum of individual demands for money to hold. The task of explaining the behavior of the aggregate demand becomes, therefore, the task of explaining why individuals' demands behave as they do. Each person or firm attempts to adjust the size of his money holdings to that level which promises to offer him the greatest net advantage, considering his resources, his present and future needs, and other relevant conditions. Each knows well that there are real inconveniences

<sup>1</sup> The terms "supply" and "demand" are used here in the sense of schedules of the various amounts that would be offered and taken at a series of values.

<sup>2</sup> Cf. especially pp. 29-34.

in permitting his holdings of purchasing power in the form of money to fall too low he may be unable to meet his debts promptly, he may have to pass up an excellent bargain in goods or securities, he may be compelled to confine his purchases to sellers who will extend credit and thereby he may be forced to pay higher prices or to accept lower-quality goods, or an unforeseen expenditure or a failure to receive money at expected times and in expected amounts may leave him unable to secure even necessities The possession of a large reserve of purchasing power in the form of money offers unquestioned advantages But it also involves sacrifices, for by parting with some of his money holdings a person can purchase a consumption good that will immediately yield an income in the form of enjoyment, or an investment asset that will yield a money income By weighing—in a rough manner, to be sure—the advantages and disadvantages of holding more and of holding less money, each person or firm decides upon the size of the money balance that he will demand)

It is essential to note that what each person or firm demands to hold is not primarily a number of monetary units, but rather a quantity of purchasing power in the form of money He elects to hold sufficient purchasing power to pay for those things that he will buy during some period of time—a week, a month, or two months, as the case may be It is evident that once a person has fixed upon the amount of purchasing power he wishes to hold in the form of money, the amount of money he must hold varies with the height of prices If the prices of the things over which he wishes to hold purchasing power are high, he must hold more units of money than he would if prices were lower) For example, if the community determines to hold at any time enough purchasing power in the form of money to buy 100 units of goods, services, and securities, it must hold \$100 in money if the average price per unit is \$1, or \$200 in money if the average price is \$2

The demand for money at any given time may be expressed as the amount of goods, services, and securities that will be purchased with money during some specified length of time. It varies, therefore, with (1) the magnitude of trade in goods, services, and securities per unit of time, and (2) the length of the period over whose transactions purchasing power in the form of money is held. It is evident that the larger the physical volume of trade to be effected with money, the greater is likely to be the demand for money. A community whose trade is large is likely to insist on holding a larger volume of purchasing power in the form of money than a community whose trade is smaller.<sup>3</sup> But the demand for money does not depend solely upon the physical volume of trade; it depends also upon the length of the period over whose trade the community elects to hold purchasing power in the form of money. With a given physical volume of trade, the demand is greater if the community elects to hold enough money to cover its purchases during two months than it would be if the community elected to hold only enough money to cover its purchases for one month. The length of this period may be expressed as a fraction of a year. If the period is one month, the fraction is  $1/12$ , if it is two months, the fraction is  $1/6$ . This fraction will be denoted hereafter by the symbol  $K$ .

$K$  is obviously very closely related to the velocity of circulation of money. It is, in fact, the reciprocal of  $V$ , so that  $K = 1/V$ , and  $V = 1/K$ . If, for example, the community demands to hold an amount of money equal to its expenditures for two months,  $K = 1/6$ , and total expenditures are at the rate of six times the money supply each year,  $V$  is at the rate of six per year.<sup>4</sup>

Since  $K$  and  $V$  are reciprocals and are really the same thing regarded from different points of view, they are determined by

<sup>3</sup> For a discussion of the determinants of  $T$ , see pp. 40-44.

<sup>4</sup> Cf. D. H. Robertson, *Money*, New York, 1929, p. 195. A. W. Marget, *The Theory of Prices*, New York, 1938, Volume I, pp. 415-420.

the same factors. These were discussed in some detail in Chapter II<sup>5</sup> and need only be outlined here.

The members of the community attempt to adjust their money holdings to that level relative to their expenditures which promises to offer the maximum net advantage, but how high this most advantageous level will be depends upon many surrounding circumstances.  $K$  will be smallest if (1) the credit and financial system is highly developed and widely used, so that loans can be made and secured quickly and investment assets can be liquidated quickly and at small expense, under these conditions people will tend to hold investment assets rather than money as a store of value, (2) the system of payments in use is such that income receipts are frequent and regular and the times of receipt and disbursement are closely coordinated, and (3) the members of the community anticipate that their incomes will accrue regularly and in increasing amounts and that prices of goods, services, and securities are likely to rise.  $K$  will be larger, however, if (1) the credit and financial system is poorly developed so that loans can be made and secured only with considerable difficulty and expense and investment assets can be liquidated only slowly and at a loss, (2) the system of payments in use is such that income receipts are infrequent and irregular in amount, and receipts and disbursements are poorly coordinated, and (3) the members of the community fear that their incomes will become irregular and decline in amount, and that prices of goods, services, and securities will fall.

When, after considering all the relevant conditions, existing and anticipated, the members of the community fix upon the amount of purchasing power that they will demand to hold in the form of money, they thereby determine the aggregate purchasing power of the money supply. If, for example, the

<sup>5</sup> Cf. particularly pp. 34-40.

community decides to hold money enough to pay for those things that it expects to purchase during a sixth of the coming year, the aggregate purchasing power of the money supply will be just sufficient to command those things. This equality is effected by an appropriate adjustment of prices.

For any given set of conditions as to the supply of and demand for money, there is only one appropriate price level. If prices are above this level, the aggregate purchasing power of the money supply is less than the amount demanded by the community, so that on balance the people feel that their holdings of money are deficient. They therefore attempt to build up their money reserves, and do so by one or both of two means: (1) by decreasing their spendings, or (2) by offering additional goods and services for sale. This continues until prices have fallen sufficiently to raise the purchasing power of the money supply to the desired level. But if, on the other hand, prices are below the appropriate level, the purchasing power of the money supply is in excess of the amount demanded by the community, so that on balance the people feel that their money holdings are redundant. They therefore attempt to draw down their balances, either by increasing their spendings or by withholding from the market some goods and services that would otherwise be offered for sale. This continues until prices have risen sufficiently to lower the purchasing power of the money supply to the desired level.

Since the demand for money determines the aggregate purchasing power of the money supply, however great or small this supply may be, it follows that with a given demand, the purchasing power of each unit of money varies inversely, and the price level directly, with the quantity of money. Suppose, for example, that the community demands to hold in the form of money purchasing power over 100,000 units of goods, services, and securities. If the money supply is \$100,000, the average

price per unit of things purchased will be \$1, if the money supply is \$500,000, the average price of things purchased will be \$5. But it must be emphasized that this proportionality of the money supply and the price level is maintained only if the demand for money remains constant, and except in the most extreme inflations the demand for money is fully as variable as the supply of money.

### THE CASH-BALANCE EQUATION

The advocates of the cash-balance approach, like the advocates of the transactions type of quantity theory, employ an algebraic equation to facilitate the exposition of their analysis. This equation has several variants, of which the following seems the most useful.<sup>6</sup>

$$M = KTP$$

*M* = the supply of money

*T* = the physical volume of trade to be effected with money during the year

*K* = the length of the period (expressed as a fraction of a year) over whose transactions purchasing power is held in the form of money

*P* = the price level of things included in *T*

This equation states the truism that the value of the money supply (*M*) is equal to the value of those things over which purchasing power is held in the form of money (*KTP*). *KT* is the physical volume of things over which purchasing power is held in the form of money, and *P* is the average price of each unit of those things. *P* may vary as a result of changes in any one or more of the factors *M*, *K*, and *T*. In other words, *P* may be altered by a shift in the supply of money (*M*), or by a

<sup>6</sup> Cf D H Robertson, *Money*, New York, 1929, p 195.

shift in the demand for purchasing power in the form of money, which varies with  $T$  and  $K$

It is interesting to note that the cash-balance equation can be easily converted into the form of equation used in Chapters II and III in presenting the transactions type of quantity theory. Since  $K = 1/V$ , the equation  $M = KTP$  may be written  $M = 1/VTP$ , or  $MV = TP$ , which is the form employed by the transactions type of quantity theory.

#### CHANGES IN THE MONEY SUPPLY AND THEIR EFFECTS ON PRICES

When the money supply is increased, the community is in possession of larger money balances and also, until prices have risen correspondingly, of larger balances of purchasing power in the form of money.<sup>7</sup> If the increase in the supply is not accompanied by a corresponding increase in the demand for money—and there is no reason to expect that it will be—the holders of the new money feel that their balances are larger than they need be, relative to expenditures, and the possessors of "superfluous" money are disposed to exchange it for economic goods. To this end they increase their demand and expenditures for the goods of their choice—producers' goods, consumers' goods, or securities, as the case may be. And the resulting rise of prices is not limited to the things demanded by the first possessors of the new money. As the additional money flows into the possession of the sellers of goods, they, in turn, feel that their balances are redundant and increase their expenditures. This is repeated until many, if not all, prices have been affected, and the supply of and demand for money have again been equated. If the demand remains unaltered, the rise of prices will be proportional to the change in the supply.

<sup>7</sup> This paragraph leans heavily upon L. Von Mises, *The Theory of Money and Credit*, New York, 1935, p. 139.

But during the period of readjustment the demand for money is almost certain to be shifted. How much and in what direction it will shift varies from case to case, for it is subject to two sets of influences, one tending to increase and the other to decrease it. The pressure toward a larger demand for money emanates from the increase of  $T$  induced by the rise of expenditures.<sup>8</sup> The pressure toward a smaller demand is traceable to the decline of  $K$ . As the community feels more and more secure and expects prices to rise, it tends to shorten the period over whose purchases it will hold purchasing power in the form of money. If the price increase is expected to be precipitous the demand may fall to very low levels. At the height of the inflation in Germany there was hardly a retailer or workman who held enough money to cover his needs for more than two or three days.<sup>9</sup> Virtually any commodity, no matter how illiquid, was a better store of value than money.

Just how an increase in the money supply will affect the demand for money during the readjustment period depends, therefore, upon the relative responses of  $T$  and  $K$ , if  $T$  rises more than  $K$  declines, the demand will rise, but if  $T$  rises less than  $K$  declines, the demand will fall. Either is possible, and both may occur at different stages of the same expansion, especially if the expansion starts from a condition of serious unemployment. At first  $T$  may increase fairly rapidly while  $K$  declines only slightly, owing to the lack of fear of rising prices. But later in the period, as production approaches capacity levels,  $T$  can be increased but little further, whereas  $K$  may fall to very low levels.<sup>10</sup> This helps to explain why prices some-

<sup>8</sup> Cf. p. 51.

<sup>9</sup> Cf. Constantino Bresciani Turroni, *The Economics of Inflation*, London, 1937, p. 166.

<sup>10</sup> In the last stages of extreme inflations, such as that in Germany, business may become so chaotic that  $T$  actually declines while  $K$  continues to fall.

times rise slowly at first when the money supply is increased and later climb at an accelerating pace

The analysis above applies to the transition period. In the long run, after all adjustments have been completed, the effect of an increase in the money supply is to cause prices to be proportionally higher—approximately—than they would have been in the absence of the expansion of money. This is because in the long run the demand for money is determined largely, though not entirely, by factors independent of the money supply.

The effects of a decrease in the money supply are roughly the reverse of those just described. When the supply is diminished the community has smaller money balances and also, until prices have fallen sufficiently, smaller balances of purchasing power in the form of money. If the decrease in the supply is not offset by a corresponding decrease in the demand for money, those with diminished balances feel that their money holdings are uncomfortably low and are anxious to replenish them. They attempt to do this either by lowering their demand and expenditure for goods, services, and securities, or by offering these things for sale on more attractive terms. This tends to depress the prices of those things for which expenditures are decreased or whose supply is increased. The price decline is not limited to such things, however, for as the original losers of money replenish their balances at the expense of other members of the community, the tendency to prize money more and goods less spreads. This continues until the value of money has risen sufficiently to reestablish equilibrium between the demand for and the supply of money. If the demand remained unaltered, the decline of prices would be proportional to the decrease in the supply.

But during the period of readjustment the demand is almost certain to be shifted, though because of the opposing forces

at work the extent and direction of the shift vary from case to case. The decline of  $T$  accompanying the decrease in expenditures tends to reduce the demand for money. But the rise of  $K$ , owing to the growth of pessimism as to employment, incomes, and prices, tends in the opposite direction.

It is possible, of course, that  $T$  will fall more than  $K$  increases, so that the lessening of the money supply will bring about some reduction in the demand for money, and that prices will therefore fall less than in proportion to the decline of the money supply. More often, however,  $K$  increases more than  $T$  declines, so that the demand is greater and prices fall more than in proportion to the decrease in the supply.

These statements apply to the transition period. In the long run, after all readjustments are completed, the effect of a reduction in the money supply is to cause prices to be proportionally lower—approximately—than they would have been had the supply of money not been allowed to decline.

#### CHANGES IN THE DEMAND FOR MONEY

Variations of the price level may also originate in shifts in the demand for money—in the sense of shifts in the whole demand schedule—resulting from changes in either  $T$  or  $K$ , or both.

If the community decreases its demand for money, either because of a decline in trade or because shifts in existing or anticipated conditions make it appear wise to hold less money as a store of value, and if the supply of money is not decreased correspondingly, those whose demand has fallen will enter the market with their “surplus” money and will swell expenditures. Or in some cases they may lower their money balances by reducing the quantity of goods, services, and securities that they offer for sale for money. This rise of expenditures and decrease in the supply of things offered for sale serves to raise

prices, and the price increase continues until the aggregate purchasing power of the money supply is lowered to the level demanded by the community. It is important to note that a price rise initiated by a decrease in the demand for money may become cumulative, both because an original increase in prices can give birth to anticipations of still further increases and thereby lower even more the demand for money, and because the rise of prices exerts pressure toward an increase in bank credit.

The effects of a greater demand for money, owing to increases in either  $T$  or  $K$ , or both, are roughly the reverse of those just described. In the absence of an offsetting expansion of the money supply, the members of the community who have increased their demand can build up their balances only by decreasing their expenditures or by offering more things for sale. This lowers prices and continues to do so until the total value of the money supply has been raised to the level demanded. There is danger that the decline of prices so originated may become cumulative, for it may initiate expectations of still further declines, thereby raising even more the demand for money and exerting a pressure toward a reduction of bank credit.

## CHAPTER V

### COMMODITY THEORIES OF MONEY

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#### INTRODUCTION

The commodity theories of money are at least as old as the quantity theories and have assumed even more varied forms. Their common element is a tendency to regard money as merely a specified quantity of the commodity of which it is composed and to attempt to explain its value by analyzing the factors determining the supply of and demand for this commodity. The similarity between this type of theory and the cash-balance type of quantity theory discussed in the preceding chapter is evident, both are stated in the familiar terms of supply and demand. There is, however, a very significant difference between them. Whereas the cash-balance approach deals with the supply of and demand for all types of money, the commodity theory centers its analysis on the supply of and demand for the commodity out of which the standard money is made, other types of money being taken into consideration only as a factor influencing the size of the demand for and the supply of the standard money. Some variants of this theory are valid and are highly useful for analyzing monetary problems, particularly those pertaining to gold production and its relationships to price levels. Others are less useful, and some are actually misleading. This chapter will be devoted to what the writer considers to be the most valid and useful variant and will refer to the others only incidentally.

### THE VALUE OF STANDARD GOLD MONEY

The commodity theory of the value of money applies most simply to the case in which a country's standard money is metallic, whether it is gold, silver, or some other metal. The discussion that follows refers to gold-standard conditions, but the general principles set forth apply as well when some other metal is used.<sup>1</sup> The case of inconvertible paper currencies will be considered later.

To establish and maintain a full gold standard, a country must do the following things: (1) It must define its standard or basic monetary unit in terms of gold. This it may do either by stating the number of grains of pure gold in the monetary unit or by fixing a mint price for gold. Though they seem at first to differ, both processes are actually the same. For example, when the pure-gold content of the dollar was fixed at 13.71 grains, the price of gold was automatically fixed at \$35 an ounce, for one ounce (480 grains) is divisible into 35 parts containing 13.71 grains each. And to fix the mint price of gold at \$35 an ounce automatically gives each dollar a gold content of  $1/35$  of an ounce, or 13.71 grains. (2) The monetary authority must purchase at the same fixed price all gold offered to it. (3) The monetary authority must sell gold at the same fixed price in unlimited amounts. (4) All other types of money in the country must be kept at a parity with the standard money. This is usually accomplished by providing for free interconvertibility of all types of money. And (5) free import and free export of gold must be permitted.

So long as the monetary authority of the country maintains the gold standard by buying and selling gold freely at a fixed price, gold must have the same value in both its monetary

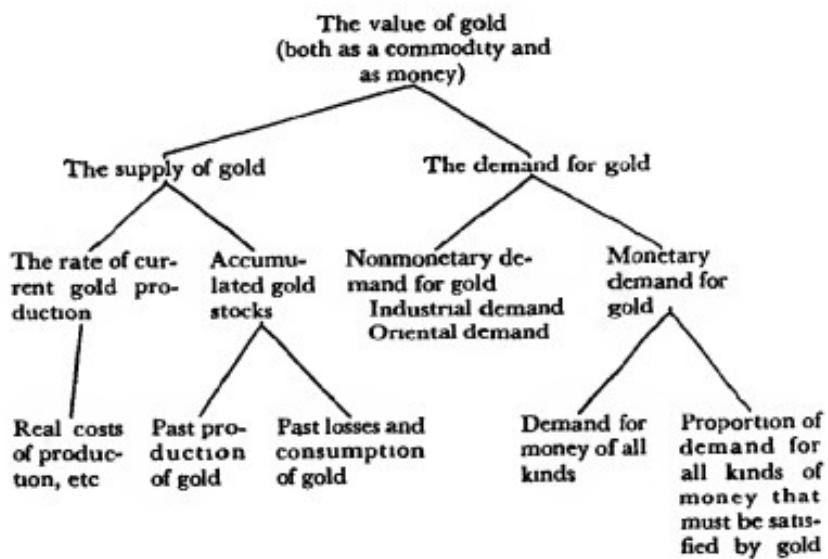
<sup>1</sup> The analysis also applies, though with some modifications, to a bimetallic standard.

and its commodity uses. No seller will offer gold in the market for less than the price offered by the monetary authority, and no demander will pay more than the price at which the monetary authority stands ready to sell.<sup>2</sup> A standard gold money is thus "full-bodied" money, its value as money and its value as a commodity are necessarily equal. Even under a gold standard, however, full-bodied gold coins make up at most only a small part of the money in actual circulation. Most, if not all, of the circulating media is composed of checking deposits, paper money, and coins of various other metals. These are usually far from full-bodied, their value as a commodity is much less than their value as money. The commodity value of the silver in a silver dollar has not approached a dollar for twenty years, and the commodity value of the paper, ink, and labor embodied in a \$1000 bill is at most a few cents. Despite the low value of their commodity content, however, these types of money circulate at a parity with gold, owing both to the limitation of their quantity and to the fact that the monetary authority maintains free interconvertibility between them and gold. Thus under the gold standard each unit of these types of money possesses a value equal, not to the value of its own commodity content, but to that of the gold into which it can be converted.

The commodity theorists contend that since the value of the monetary unit under gold-standard conditions is equal to that of a fixed amount of a commodity—gold—it is governed by the same factors that govern the value of any other commodity, and is therefore best explained by the general theory of economic value. Before proceeding to use this analysis to explain the value of gold, it is necessary to review for a moment the meaning of "value." As was shown earlier, the worth of any economic good is its ability to command other goods in ex-

<sup>2</sup> This description is not strictly accurate for the United States, for the Treasury imposes a small "handling charge" so that the buying price is slightly below and the selling price slightly above \$35 an ounce.

change Under a barter economy the value of a good in terms of others can be observed directly in the market In a money economy it is ascertained by comparing the price of the good with the prices of other things for which it is exchangeable And it is altered with each change in its price relative to other prices, whether the shift of relative position results from a change in its own price, or in other prices, or from nonproportional changes in both The term "the value of gold" is used in the sense just described—the ability of gold to command other goods in exchange—and it varies with each shift in the relative positions of the prices of gold and of other things We have seen, however, that so long as a country maintains its gold standard unchanged, the price of gold must remain stable at the level fixed by the monetary authority, so the value of gold can be lowered only by a rise in the prices of other commodities and can be raised only by a fall in these prices The results of changes in the price of gold by the monetary authority will be discussed later



**THE SUPPLY OF GOLD**

It is a commonplace that the value of any commodity depends to some extent upon its supply, the term "supply" being used to mean a schedule of the various amounts that would be made available at a series of values. The supply of gold is composed of two parts (1) current production, and (2) accumulated stocks. These will be discussed in turn.

**The Supply of Currently Produced Gold Its Elasticity—** Under a given set of conditions as to the technical difficulties of mining and refining gold, the rate of current gold production varies with its value. Gold mining is an increasing cost industry, though some ores are so rich and favorably situated that gold can be extracted from them at a relatively low real cost, the rate of production can be accelerated only by exploiting ores that are progressively poorer and less well situated. This involves progressively higher real cost per additional unit of output, and since producers tend to expand their output to the point at which added costs of production have risen to the level of added receipts, it is evident that under a given set of technical conditions as to the difficulty of producing gold, output will be greater if the value of gold is high (i.e., if the price level is low) than it would be if the value were lower (i.e., if the price level were higher). Many economists have pointed out that this sensitivity of gold production to changes in its value tends to diminish the effects exerted upon the value by shifts in the demand for it. Gold production tends to be decreased when the price level is raised by a reduced demand for gold and to rise when the price level is lowered by an increased demand. However weak this tendency may be, the reason for its existence is not hard to understand. We have seen that so long as the gold content of the monetary unit is unchanged, the price of gold must remain constant. But the

money cost of mining and refining gold—composed as it is of the costs of labor, machinery, explosives, refining, chemicals, fuel, and other supplies—fluctuates with general prices. In a period of rising prices, therefore, the money cost of gold production rises against the fixed price of gold, thereby tending to crowd out of production the higher-cost mines and sometimes the higher-cost portion of production within a mine. This decrease of output during a period of price rise induced by a decrease in the demand for gold tends to retard the price rise by curtailing additions to the gold stock. Events during a period of price decline induced by an increased demand for gold are roughly the reverse. As prices fall, the money costs of gold production fall, which tends to make profitable the working of ores that were previously unremunerative. The resulting rise of the rate of production tends to enlarge the monetary base more rapidly and to retard the price decline. Unfortunately, however, the stabilizing effect exerted by the elasticity of production is too weak in short periods to be of much avail in offsetting shifts in the demand for gold. The reasons for this will be seen later.

*Shifts in the Supply of Currently Produced Gold.*—Though under a given set of conditions as to the real cost of mining and refining gold the elasticity of production tends in some degree to retard and limit price level fluctuations induced by shifts in the demand, it is evident that shifts in the supply schedule of newly produced gold may occur and may tend to bring about changes in the value of gold. Any development that decreases the quantity of labor and capital required to produce a unit of gold increases the supply schedule of new gold and thereby tends to lower the value of gold. Some of the most important phenomena capable of exerting this type of influence are (1) discoveries of new and rich deposits, such as those in California and Australia around 1850 and in South

Africa, Alaska, and the Klondike in 1889, and the years immediately following, (2) inventions and improvements lowering the real costs of mining gold and of transporting it to market, (Included here are the development of hydraulic mining, the invention of more efficient machinery for digging, hoisting, and other mechanical processes about the mine, and the cheapening of transportation of both gold and mining supplies An interesting recent innovation in transportation is the use of airplanes to carry men and equipment to and gold from regions that were previously inaccessible ) and (3) perfection of more economical processes of refining, such as those using chlorine or cyanide of potassium These developments that lower the real cost of producing gold tend to increase the output and to lower the value of gold

Conversely, any event that increases the real cost of bringing forth new gold tends to decrease the output and to raise the value The most common event of this sort is the exhaustion of the more lucrative ores faster than new ones of comparable richness and location can be discovered and brought into production

**The Cost of Production and the Value of Gold**—It is evident, then, that the rate of gold output is affected by the cost of producing this metal But how valid is the belief held by some that the value of gold is determined by its cost of production? This query is best answered by considering two less comprehensive questions The first is, "How closely related is the rate of current gold output to its cost of production?" We have seen that shifts in costs tend to bring shifts in the rate of output, but the full effects are felt only after a delay, which is sometimes very long A decline in the cost of producing gold may not elicit a sizable increase in the rate of output for several years Most gold mining is now large-scale business involving lengthy preparations and heavy investment in fixed

capital, which, after being installed, remains usable for a long period. As a result, it may be unprofitable to open new shafts in response to lowered costs unless costs are expected to continue at the low level for a considerable time. And even when it is decided to open new mines, there is in many cases an interval of from five to eight years between the first preparations and the sale of the first gold produced.<sup>3</sup> Similarly, a rise in the costs of gold production exerts its full curtailing effects on output only after a long interval, for mines often continue in operation until opened veins are exhausted or until most of their fixed capital is worn out, despite the fact that they are earning less than a normal rate of return on the original investment in them. For these reasons, the rate of output may remain out of line with the costs of producing gold for long periods, during which mining concerns enjoy large windfall profits or suffer windfall losses.

The second question to be considered is, "How closely related to the current cost of gold production is the total supply of gold?" The relationship is very remote, and for two principal reasons. The first reason has just been given—the slowness with which the current rate of gold output adjusts itself to changes in production costs. More important, however, in separating the supply of gold and its current cost of production is the degree to which the supply is composed of stocks produced in the past. Owing to the physical imperishability of gold and to its technical treatment as money—as money it can be used repeatedly with but little physical deterioration—a large part of the gold production of past centuries is available to meet the needs of today. In 1939 the monetary gold stock of the world contained about \$24,500,000,000 of gold, and there was an additional large though undetermined amount in Oriental hoards and in gold merchandise. But though production in

<sup>3</sup> L. D. Edie, *Money, Bank Credit, and Prices*, New York, 1928, p. 241.

1939 was the largest ever recorded for a single year, it was only about \$1,400,000,000, or less than 6 per cent of the existing stocks of monetary gold. For several decades before the great depression of the 1930's, annual gold production ranged between 2 and 4 per cent of the accumulated stocks of monetary gold. Because of this low ratio of current production to accumulated stocks, the supply of gold behaves quite differently from the supply of most other types of goods, and particularly of non-durable goods. Whereas a doubling or halving of the current production of coal or cotton would usually lead to a roughly proportional change in the total amount of these commodities available for use, an even greater percentage change in the rate of gold production would affect the total available stocks of gold but little in short periods. Like the supply of other highly durable goods—such as factory buildings and railways—but to a greater degree, the supply of gold is relatively inelastic for protracted periods.

The remoteness of the relationship between the supply of gold and the current cost of production is sufficient reason for rejecting as inadequate and misleading the cost-of-production theory of the value of gold, particularly as applied to short periods. The theory would still have to be rejected as inadequate and incomplete, however, even if the gold supply did depend on current cost of production, for it would not indicate a determinate value for gold. As we saw earlier, there is not at any time one cost of producing gold, but a cost schedule reflecting the increasing cost nature of the gold-mining industry. If at any given time the cost of mining and refining gold ranges all the way from a dollar to hundreds of dollars an ounce, how can it be said that the value of gold is determined by its cost of production? As in the case of any economic good, it is only at the margin—if anywhere—that value and cost of production tend to be equal, and the location of the margin

varies with the magnitude of demand.<sup>4</sup> The demand for gold must, therefore, be considered in any adequate explanation of its value.

Before proceeding to an examination of the demand for gold, however, it may be useful to summarize our findings relating to the supply and the value of gold. (1) The supply—in the schedule sense—is made up of current gold production and of stocks produced in the past, and the second component is far the larger. (2) The supply is highly inelastic over short periods, partly because of the slow adjustability of the rate of gold output to changes in its costs of production and partly because of the quantitative importance of accumulated gold stocks. (3) Though increases and decreases in the value of gold induced by shifts in its demand tend to be retarded and limited to some extent by increases and decreases in the rate of gold output, the stabilizing effects exerted in this way are weak over any except long periods, owing to the inelasticity of the supply noted in (2). And (4) the cost-of-production theory of the value of money must be branded as inadequate and incomplete, though it does call attention to one set of influential factors.

#### THE DEMAND FOR GOLD

One variant of the commodity theory must be flatly rejected. This is the contention that the value of gold as money is determined by its value as a commodity for nonmonetary uses, that first this value for uses other than money is determined by the supply of gold and the demand for it in those nonmonetary uses, and that then the resultant value as a commodity is imposed upon it as money. This proposition is no

<sup>4</sup> Knut Wicksell, *Interest and Prices*, New York, 1936, p. 36. A further objection to the cost of production theory of the value of gold arises out of the fact that much gold is produced as a joint product with other metals—such as lead, zinc, copper, and silver—so that an accurate allocation of total costs is impossible.

more true than the opposite statement that the value of gold as money determines its value as a commodity for nonmonetary uses, indeed, the latter contention is nearer the truth, for the monetary demand is much greater than the nonmonetary demand, and gold would surely have a lower value if it were not demanded for monetary purposes Neither extreme position is tenable, however. The value of gold in all its uses is determined simultaneously by its total supply and its total demand, and the latter is composed of the demands for both monetary and nonmonetary uses Any analysis that ignores either type of demand is incomplete

**The Nonmonetary Demand for Gold**—From primitive times the nonmonetary demand for gold has been sufficient to endow this metal with a relatively high value, even if it had not been claimed for use as money Its first important uses were probably for religious purposes and for personal ornamentation The desire for self-decoration and the joy of conspicuous waste have apparently not been eradicated from mankind in the process of civilization, for considerable amounts of gold are still utilized in watches, bracelets, rings, chains, pins, and other forms of personal adornment Gold is also demanded for making plate, for gilding books and other articles, for producing rich architectural effects on domes and interiors of buildings—particularly of public buildings and houses of worship—for certain manufacturing processes, and for dental and surgical purposes The aggregate of these demands is usually referred to as the industrial demand for gold

The value of gold is obviously influenced by the magnitude of its industrial demand An increase in the industrial demand—in the sense of an increase in the demand schedule—leaves less gold for monetary uses and tends to raise the value of gold both as a commodity and as money And a decrease in the industrial demand—brought about by such events as a decline in the

community's desire for gold ornaments or the development of more satisfactory substitutes—allows more gold to flow into monetary uses and tends to lower the value of gold both as a commodity and as money

Though shifts in the industrial demand—in the sense of shifts in the demand schedule—may alter the total demand for gold and thereby its value, there is some tendency for the elasticity of the industrial demand at any time to retard and limit price level fluctuations induced by shifts in the gold supply or in its other types of demand Owing to the constancy of the price of gold under the gold standard, prices of articles made of this material tend to rise less in periods of general price increase and to fall less in periods of general decline than do prices of most other commodities When the price level rises, therefore, the consumption of gold in its industrial uses usually rises, thereby reducing the volume available for monetary and other purposes and tending to retard the price rise But when the price level falls, the consumption of gold in industry usually falls, thereby releasing a larger part of current production for monetary and other uses and militating against further price declines

That shifts in the industrial demand for gold serve to alter its value and that the elasticity of this demand acts to some extent as a shock absorber to retard variations in the value of gold emanating from changes in the supply or in other types of demand is undoubtedly true Over a long period the behavior of the industrial demand is a major determinant of the value of gold But its efficacy in explaining changes in value over short periods must not be exaggerated The industrial demand is only a very small part of total demand Though such figures are subject to a high degree of error, it is estimated that during the decade of the 1920's the industrial demand in western nations fluctuated around \$100,000,000 per year, and roughly

the same average amount was taken annually by the Orient. But about \$10,000,000,000 of gold was held in the monetary systems of the world.<sup>5</sup> Because the industrial demand is such a small part of the total, even large percentage variations in it exert but small effects on aggregate demand in the short run, and its elasticity would have to be great indeed to absorb any considerable part of the effects of variations in the gold supply or of fluctuations in the other types of demand for gold.

The other component part of the nonmonetary need is the Oriental demand (largely by India) for this metal to hoard or to use for ornaments.<sup>6</sup> As already noted, an annual average of roughly \$100,000,000 in gold was taken by the Orient during the decade of the 1920's, though the amount varied widely from year to year. In years that were highly prosperous for those sections, especially for India, large amounts were imported. In bad years, on the other hand, gold imports were much smaller, and sometimes were less than exports. It is evident that the value of gold is influenced by this Oriental demand. As was found to be the case with the industrial demand, however, the Oriental demand is such a small part of the total that its fluctuations exert but slight effect on the value of gold during short periods. But the effect of the Oriental demand can be quite important over longer periods. To take an extreme example, if the Orient should import no more gold for twenty years—and especially if it should disgorge large amounts of gold—the amount available for industrial and monetary uses would be much greater and the value would probably be lower than

<sup>5</sup> At \$20 67 a fine ounce.

<sup>6</sup> C. O. Hardy contends that the Oriental demand for gold is more properly classified as a monetary demand, since the gold is desired for use as a store of value. He concludes, however, that since it behaves quite differently from the monetary demand for gold in the remainder of the world, it is more conveniently discussed as a part of the nonmonetary demand. Cf. *Is There Enough Gold?* Washington, 1936, pp. 78-79.

they would be if the Oriental demand continued at the level of the 1920's A large and sustained increase in the Oriental demand would produce effects of an opposite nature

*The Monetary Demand for Gold*—By far the largest part of the aggregate demand for gold at any time is the demand for use in the monetary systems of the world. Not only do the monetary systems hold \$24,500,000,000 of gold accumulated in the past, but they absorb each year half or more of the current output. It is evident, therefore, that fluctuations in monetary demand are capable of exerting a powerful influence upon both the total demand and the value of gold. They are the most important single source of changes in the value of gold during the various phases of the business cycle, and they rank in importance with fluctuations in the gold supply as determinants of the value over long periods.

The magnitude of the world's demand for gold for monetary uses varies with two general factors (1) the world's demand for money of all kinds, and (2) the proportion of that demand that is satisfied by gold. The demand for gold for monetary purposes can be increased by a growth in the demand for money of all kinds, by a rise in the proportion of that demand that must be satisfied by gold, or by a combination of the two. And, conversely, the monetary demand for gold may decline because of a decrease in the demand for money of all kinds, because of a decrease in the proportion of that demand that is satisfied by gold, or because of a combination of the two.

The demand for money of all kinds and the factors determining its behavior have already been discussed.<sup>7</sup> It is sufficient, therefore, to recall here that it varies with the physical volume of trade to be effected with money and with the proportion of that trade over which people insist on holding purchasing power.

<sup>7</sup> Cf Chapter IV, especially pp 75-79

in the form of money, and that it is highly variable, showing both long-term changes and wide cyclical fluctuations

Only a small part of the total demand for money is satisfied by gold, however. By far the larger part is satisfied by other types of money, such as non-gold coins, paper money issued by commercial banks and governmental authorities, and—what is most important of all—checking deposits at banks. Since at most only a small gold reserve is held behind these types of money, they serve as “economizers” of gold, or as “substitutes” for it. On account of the great volume of these “substitute” types of money, both the monetary demand and the value of gold are very much less than they would be if the entire demand for money had to be satisfied by gold alone.

Moreover, the behavior of the monetary demand for gold is altered by fluctuations in the proportion of the demand for money that is satisfied by types other than gold. Any development that increases the proportion of the demand for money that is satisfied by “substitute” types of money serves to decrease the demand for gold and thereby to lower its value. Some of the most important developments leading to greater “economies of gold” are as follows:

- (1) The spread of commercial banking and the increased use of checking deposits as money. Because of the fractional reserve principle, each dollar of reserves can support several dollars of checking deposits.
- (2) An increase in the number of dollars of checking deposits erected on each dollar of bank reserves, owing to either a reduction of the legally or customarily required reserve ratio or to a diminution of excess reserves.
- (3) An enlargement of central bank credit relative to gold reserves, for central bank credit can be used as cash for hand-to-hand circulation or for bank reserves.
- (4) A prohibition of the domestic circulation and hoarding of gold coin and bullion. This concentrates a larger proportion of the monetary gold in the hands of the monetary authorities.

and can permit the erection of a larger superstructure of other types of money (5) The spread of the gold-exchange standard, which in effect permits gold to serve as reserves for two or more countries simultaneously (6) The issue of additional paper money and subsidiary coins of metals other than gold<sup>8</sup> And (7) the abandonment of the gold standard and the export of gold by a country or countries which thereafter operate on non-gold standards

Just as the above developments can increase the total supply of money relative to the supply of monetary gold and can decrease, or at least retard the rise of, the monetary demand for gold, developments of an opposite nature can decrease the proportion of the demand for money that is satisfied by gold "substitutes" and can serve to increase the demand for gold. Some of the most important developments serving to shift upon gold a larger proportion of the demand for money are the following:

- (1) A diminished willingness of the public to hold checking deposits rather than other types of money, owing to such factors as fear of bank failures, the imposition of taxes on checks, or the introduction of service charges by the banks. The resulting loss of reserves may force the banking system to reduce checking deposits by an amount equal to several times the drain of cash.
- (2) A decrease in the number of dollars of checking deposits erected on each dollar of bank reserves, because of either a rise in the legally or customarily required reserve ratio or an accumulation of excess reserves. Banks are especially likely to accumulate excess reserves in periods of business stagnation.
- (3) A decrease in outstanding central bank credit relative to gold reserves. This may be considered as either a hoarding of additional gold by central banks or a reduction in the quantity of "central bank" money outstanding.
- (4) Greater domestic hoarding of gold coin and bullion rather than other types of

<sup>8</sup> Other than gold certificates which require 100 per cent gold backing

money (5) A decrease in the use of the gold-exchange standard and a shift to a full gold standard (6) The withdrawal from use of non-gold subsidiary coins or paper money, so that gold money or money requiring larger gold reserves must be used in their place (7) The adoption of a gold standard by nations previously using inconvertible paper, silver, or bimetallic standards This widens the sphere of circulation of gold and increases the monetary demand for gold relative to the demand for money in general

It is evident, then, that the monetary demand for gold, because of its magnitude and its high degree of variability, is one of the most important determinants of the value of gold

#### THE COMMODITY THEORY APPLIED TO INCONVERTIBLE PAPER MONEY

It has been seen in the preceding pages that the commodity theory can be used to explain the value of money under a gold standard, which requires that the value of the monetary unit be kept at a fixed level in terms of gold Some economists have insisted, however, that this theory can also be applied to an inconvertible paper money which, instead of being fixed in terms of gold, is free to fluctuate in terms of that metal They hold that the value of such a money is determined not by the commodity value of the paper of which it is composed—history records only a few cases in which the value of a paper money has fallen so low—but rather by the worth of the gold into which the money will probably be made convertible in the future According to this view, the purchasing power of an inconvertible paper money at any time depends upon the community's expectations as to (1) the amount of gold into which the monetary unit is likely to be made convertible, (2) the degree of probability that such convertibility will in fact be established, (3) the purchasing power of the gold into which

the money will be made convertible, (4) the length of time that will probably elapse before the establishment of convertibility, and (5) the rate of interest that must be sacrificed if paper money is held rather than passed along. In other words, the value of an inconverntible paper money at any time is equal to the discounted value of the gold into which the paper money will in the future become convertible. It is significant that virtually all the proponents of this theory believe that only money with a considerable value for nonmonetary purposes will be accepted in trade and that its value as money is determined by its value as a commodity. They are forced, therefore, to resort to some such theory as the one under consideration to explain why paper money will circulate at any value whatever.

There are undoubtedly cases in which the prospect of future convertibility does influence the value of a paper money which is for the time being inconverntible.<sup>9</sup> The most important of these cases is that in which the date and terms on which the paper money is to be made convertible into gold have been made public. This prospect of convertibility into gold sets a lower limit—though a limit that varies with expectations as to the probability and terms of future convertibility—to the value of a paper money. This value cannot fall below the level of what the community on balance believes to be the present discounted value of the gold into which the money will probably become convertible, any tendency for it to do so would offer chances for abnormally large profits to be gained by holding money for later conversion into gold and would induce enough additional hoarding of paper money to raise its value to the level just described. The value of an inconverntible paper money may, however, remain far above this lower limit. There have been many cases in which inconverntible paper currencies with virtually no prospect for redeemability in gold have continued

<sup>9</sup> Cf. R. G. Hawtrey, *Currency and Credit*, London, 1930, pp. 32-33.

to be accepted and have circulated at a value far greater than was justified by their prospects for future conversion. There have even been cases in which a paper money completely divorced from gold has come to possess a purchasing power greater than that of the amount of gold into which it was previously redeemable. The proponents of the theory under discussion cannot explain this phenomenon without resorting to highly unrealistic assumptions. Their fundamental error lies in their contention that money is valued only for its commodity content. Once a paper money has been established by law or custom as a means of payment, it can have a value as money quite apart from its value as a commodity. The demand for these pieces of paper to carry on the trade of the community may easily endow them with a higher purchasing power than they would have as tenuous claims upon some undetermined amount of gold into which they might be converted at some indefinite and remote future date.

#### EVALUATION OF THE COMMODITY THEORY

The commodity theory of the value of money cannot be validly applied to all types of money, for, as we have seen, it fails when applied to inconvertible paper money. Moreover, in the hands of some of its advocates it is often one-sided and inadequate, if not fallacious, as applied to money under gold-standard conditions. Some of the most common errors of the commodity theorist are to overstress the role played by the cost of gold production, to overestimate the shiftability and elasticity of the gold supply—especially in short periods—to contend that the value of gold as money merely reflects and is determined by the value of gold as a commodity, and to underestimate the causative influence of the monetary demand for gold. But if these pitfalls are avoided, as has been attempted in this chapter, the commodity theory can contribute to our understanding of the behavior of the value of money under a metallic standard.

It is the writer's opinion, however, that even when the commodity theory is stated in its most valid form it throws less light upon the process of price-level determination and the state of economic activity than does a carefully formulated quantity theory. There is nothing in the commodity theory that has not been included in careful and accurate formulations of the quantity theory. Quantity theorists have from the beginning insisted that the cost of gold production, the stocks of accumulated gold, and the nonmonetary demand for gold must be considered in explaining the supply of monetary gold, which, in turn, is one—though only one—of the determinants of the money supply. And in their analysis of  $T$ ,  $K$  (or  $V$ ), and the ratio of the total money supply to monetary gold, quantity theorists have explained more clearly than have the commodity theorists the phenomena that the latter include under the head of the monetary demand for gold. An adequate and realistic explanation of price-level determination must explain in terms of human decisions why the flows of money expenditures and of the physical volume of trade behave as they do. The quantity theory, though far from perfect, surely ranks ahead of the commodity theory in this regard.

#### ALTERATIONS IN THE PRICE OF GOLD AND THEIR EFFECT ON PRICE LEVELS

Monetary theorists have long been interested in the effects exerted upon the general level of prices by alterations in the gold content of the monetary unit. This interest has been much heightened in recent years by two events. One of these has been the persistent proposal by some monetary reformers that the price of gold be regulated by the monetary authority in such a way as first to raise the prices of goods at wholesale to a desired level and then to stabilize them there. The other was the increase, in 1933 and 1934, of the price of gold in the

United States from \$20.67 to \$35.00 an ounce, followed some time later by similar actions on the part of a number of European nations.

In analyzing the effects of changes in the price of gold, two cases must be distinguished. The first is that in which all gold-standard countries change their prices of gold simultaneously and to the same extent. Such an event has not in fact occurred, but many of the proposals for monetary reform have suggested its desirability. The second is that in which one country alone changes its mint price of gold.

*Alterations in the Price of Gold in All Gold-standard Countries*—What would be the effects on price levels if all gold-standard countries simultaneously doubled or halved the price of gold? All schools of monetary theorists agree that increases or decreases in the mint price of gold tend to produce increases or decreases in price levels, but they disagree heartily as to the extent of the effect exerted on prices, as to the certainty that prices will respond, and as to the length of time required for price changes to be effected. Some of the more naive theorists have contended that changes in the price of gold will alter the price level proportionally and immediately, or nearly so. Though this list includes a few incautious quantity theorists, it appears to be composed largely of those who believe that the value of money depends upon the value of the money material in its commodity uses. It is obvious, these commodity theorists contend, that to halve or double the amount of gold of which the dollar is composed and for which it is valued will halve or double the value of the dollar. This theory must be rejected. It is contradicted by experience and it assumes an automatic and even mystical causation that does not exist in an economic system activated by human decisions. No one has yet explained why a given change in the mint price of gold might reasonably

be expected to bring about such a shift in the money demand for goods and services as to effect an immediate and proportional change in their prices. This is not to deny that the long-run effect on prices may, though it need not, be approximately proportional.

A change in the price of gold by all gold-standard countries would influence price levels principally through its effect upon the money value of the monetary gold stock and thence upon the size of the money supply. Alterations in the price of gold change the money value of the gold stock in two ways by changing the money value of gold stocks already accumulated and by accelerating or slowing down the rate of gold production.<sup>10</sup> In early 1939, the monetary systems of the world held about 700 million ounces of gold. At \$20 an ounce this gold would have been valued at \$14,000,000,000, at \$35 an ounce it was valued at \$24,500,000,000. An increase in the price of gold also enhances the profitability of gold mining and stimulates gold production until such time as higher prices raise production costs sufficiently to render unprofitable again the added production. This stimulus may continue for a considerable period. A reduction in the price of gold, on the other hand, decreases the profitability of gold mining and discourages gold production until money costs of production have declined as much as the price of gold.

It must be emphasized, however, that it is by no means necessary that a change in the money value of the monetary gold stock should bring about a proportional change in the total money supply, this is particularly true in the shorter run. What the reaction of the total money supply will be and when this

<sup>10</sup> The monetary gold stock may also be altered by induced changes in gold consumption for nonmonetary purposes. A rise in the price of gold is likely to discourage the industrial use of gold, at least until other prices have risen proportionally, thereby making more gold available for use as money. A decrease in the price of gold would have opposite effects.

reaction will occur depends on many conditions, of which we shall consider some of the more important. Three cases are those in which (1) all monetary gold is held by the members of the community, who absorb all the pecuniary gains or losses resulting from changes in the mint price of gold, (2) all monetary gold is held by the commercial banks, which assume the profits or losses resulting from the changed price of gold, and (3) all monetary gold is held by the central banks and treasuries, which take the gold profits and losses.

If all the gold were held by the people, if gold coin were the only type of money in circulation, and if all the old coins were taken to the mint, recoined into new units containing the same aggregate of gold, and paid out into circulation, a given change in the price of gold would effect a proportional change in the money supply. Suppose, for example, that the only money a country has is 1,000,000 gold rubles weighing ten grains each. If the government then decreases the gold content of the ruble by 50 per cent, each of the old rubles can be coined into two of the new type, and the money supply will be doubled. Conversely, if the weight of the ruble is doubled and all the gold is recoined, the money supply will be halved. But this is obviously far from an accurate description of what occurs when a large part of the money in use is in the form of nongold cash and of checking accounts, and when most of the monetary gold is held by commercial banks, central banks, and governmental authorities.

If all the monetary gold were in the hands of the commercial banks and if they were permitted to enjoy any profits and were forced to bear any losses arising out of increases and decreases in the price of gold, these changes would have the immediate effect of altering the volume of commercial bank reserves. No actual rise or decline of the money supply in the hands of the public would occur, however, until the banks expanded or con-

tracted their loans and investments. This might happen quickly or only slowly. If bank reserves were reduced by a decrease in the price of gold, the banks might contract their credit by raising interest rates, by rationing loans, and by selling investments. On the other hand, they might not contract credit at all or they might contract it only slowly. If they possessed sufficient excess reserves, they could resist the pressure for contraction for some time, and even in the absence of excess reserves they might postpone contraction and repair their reserve position for a time by borrowing from the central banks. Whether or not the latter course would be open to them would depend on central bank policy. But if bank reserves were enhanced by an increase in the price of gold and the banks did not use these funds to retire loans at the central bank, they would feel a pressure to expand their loans and investments in order to convert sterile excess reserves into earning assets. To expand bank credit in periods of prosperity is easy enough, though it may require some time, but it is likely to be much more difficult in periods of business stagnation. At such times the banks may fear to buy investments or even to lend on short term, and even lower interest rates and more liberal standards for judging loan applications may not bring forth a sufficient demand for loans to utilize all the added reserves. In summary, even if alterations in the price of gold do bring about corresponding changes in the volume of commercial bank reserves, the money supply may be altered only slowly and after a considerable delay, owing to the dependence of the volume of checking deposits on the lending and investing policies of banks.

In most cases, however, alterations in the price of gold do not even bring about immediate and proportional changes in the volume of commercial bank reserves. In modern monetary systems under which most of the monetary gold is concentrated in the vaults of central banks and governments most of the

profit or loss resulting from increases or decreases in the price of gold accrue directly to these holders, and in recent times governments have usually appropriated any profits accruing to private holders of gold. Under these conditions, therefore, alterations in the price of gold affect the volume of commercial bank reserves only when the central bank and government permit them to do so. This may occur but slowly and then only after a delay. For example, though the United States Treasury realized a profit of \$2,808,000,000 when in 1934 it lifted the price of gold from \$20.67 to \$35.00 an ounce, only a very small part of that profit has up to the date of this writing, six years later, been made available to banks. Virtually all of it was hoarded by the Treasury. Several of the European governments that raised the price of gold followed a somewhat similar policy.

For any one or more of the above reasons the money supply may fail for some time, perhaps for a long time, to vary proportionally with the price of gold. And even if the money supply did move immediately and proportionally, the price level would not necessarily respond in a similar way, because of changes in the velocity of money and the physical volume of trade. The conclusion must be, therefore, that gold-standard countries as a group are likely to find that manipulation of the mint price of gold is not by itself an efficacious method of raising prices in the short run or of stabilizing prices through the business cycle. It does seem likely, however, that this method might be used to obviate long-term rises and declines in prices traceable to "excesses" or "shortages" of the gold supply.

*Changes in the Price of Gold by One Gold-standard Country*—The preceding discussion related to the case in which all gold-standard countries altered their prices of gold simultaneously and to the same extent. The present section will deal with the case in which one country acting alone alters the

gold content of its monetary unit while other nations maintain their units unchanged When compared, these cases show some similarities and some differences The present case is like that already discussed in that a change in the price of gold alters the value of the country's accumulated gold stock and stimulates or discourages gold production in that country until such time as offsetting changes in the costs of production have occurred For example, the increase in the price of gold from \$20.67 to \$35.00 an ounce in January, 1934, raised the value of the monetary gold that the United States then possessed from about \$4,000,000,000 to about \$6,800,000,000 and greatly stimulated domestic gold mining This case also resembles the one discussed earlier in that the size of the money supply need not vary immediately and proportionally with the money value of the monetary gold stock It differs from the earlier case primarily because of the resulting alteration of foreign exchange rates and the resulting differential between the domestic and the foreign purchasing power of gold

Let us see how and why a unilateral change of the mint price of gold will alter exchange rates between gold-standard moneys The monetary units of countries on the gold standard exchange for each other in the foreign-exchange market at a ratio closely approximating their relative gold contents If, for example, the dollar of country D contains 20 grains of pure gold while the guilder of country G contains 5 grains, 1 dollar will command about 4 guilders in the foreign-exchange market Actual market rates of exchange can deviate from this level only by a small amount measuring the costs of transporting gold from one country to the other Any alterations in the relative gold contents of the monetary units must, therefore, bring about approximately corresponding shifts in the exchange rates between them Suppose, for example, that D reduces by half the gold content of the dollar—lowering it to 10 grains—while other

gold-standard countries, including G, maintain their monetary units unchanged in terms of gold. The dollar must immediately fall by half in the foreign-exchange market, although it could formerly purchase 4 guilders, it can now purchase only 2. This decline of dollars in the foreign-exchange market, which will be considered by the nationals of D as a doubling of the prices of foreign gold moneys, will immediately bring about in D some rise in the dollar prices of both imported and exported goods, and will stimulate exports and discourage imports until such time as the domestic price level has risen as much as have the prices of gold and of foreign moneys.

It is easy to see why the doubling of the price of foreign moneys will increase in D the prices of imported goods in terms of dollars and will tend to discourage purchases abroad. Before the devaluation of the dollar, when 1 dollar would purchase 4 guilders, a commodity selling in country G for 4 guilders could be purchased for 1 dollar and could be sold in D for 1 dollar plus an additional amount sufficient to cover the costs of moving the goods and to allow importers the necessary profit. After the devaluation of the dollar, however, when the dollar will buy only 2 guilders, that same commodity will, if it still sells in G for 4 guilders, cost not 1 but 2 dollars. In the face of this rise in the prices of imports, residents of D will tend to curtail their purchases abroad until such time as their money incomes and the price levels of domestic goods have risen as much as foreign-exchange rates.

The doubling of the prices of foreign exchange will also raise the dollar prices of D's exports. Before the devaluation of the dollar, a commodity that could be sold abroad for 4 guilders would sell in D for 1 dollar minus the cost of getting it to the foreign market. But if after the devaluation of the dollar the commodity can still be sold abroad for 4 guilders, its price in D will rise to 2 dollars minus the cost of shipping it abroad,

for the 4 guilders received in payment for it can now be converted into 2 dollars. This rise in the prices of exports will encourage exports so long as the domestic price level does not rise as much as the prices of gold and foreign exchange.

The argument up to this point seems to indicate that the unilateral doubling of the price of gold by *D* will result in a doubling of the dollar prices of both importable and exportable goods. This can occur, however, only if the foreign prices of these goods—the guilder prices of the goods in *G*, for example—remain unaffected. And such a condition is not likely to persist. Actually, the foreign prices of these goods will be lowered somewhat, owing to the decrease in *D*'s demand for the importable goods and to the increase in her supply of exports. The fall of prices abroad will not, however, be in proportion to the fall of the foreign-exchange value of the dollar, for *D*'s demand and supply make up only a part of the total demand and supply that determine prices in the world markets. Thus the principle remains that the devaluation of the dollar will tend to raise the prices of importable and exportable goods in *D*, though the extent of the rise is likely not to be as great as at first indicated.<sup>11</sup>

We have seen that the fall of the dollar in the foreign-exchange market tended directly to raise the prices of importable and exportable goods. It also exerts important direct and

<sup>11</sup> How much the foreign prices of goods imported and exported by *D* will be affected by *D*'s devaluation depends on many factors, among which are the ratio of *D*'s demand to the total world's demand for the goods imported by *D* and the ratio of *D*'s exports to the total world supply of these goods. In general, the smaller the proportion of *D*'s imports and exports to the world total of these goods, the smaller will be the effects exerted on world prices by variations in *D*'s demand and supply, and the greater, therefore, will be the effects of *D*'s devaluation on the dollar prices of importable and exportable goods. This indicates that the effect of devaluation on the internal prices of goods capable of entering international trade is likely to be greater in the case of a small country than in the case of a large and economically important nation.

indirect effects upon the prices of goods that do not enter into international trade. A few of these can be noted. It is evident that domestic goods made partly or wholly of importable or exportable goods that have risen in price will themselves rise, as will also domestic goods that are more or less close substitutes for the international goods. The prices of domestic goods may also be raised by the inflow of gold that is likely to result from the encouragement of *D*'s exports and the discouragement of her imports. It must be remembered, however, that an expansion of the monetary gold stock, even if it does occur, may not be followed by a parallel expansion of the total money supply, money expenditures, and prices until after a considerable delay, if at all.

Up to this point it has been assumed that despite *D*'s devaluation of the dollar other gold-standard countries maintained their monetary units unchanged and took no other retaliatory action. But in a world composed of nations that usually guard jealously their gold reserves and that prize highly their export markets and merely tolerate imports, retaliatory action is extremely probable, particularly if *D* is a large and economically important nation. These retaliatory measures may be of several types. The other nations may devalue their own monetary units, perhaps even more than did *D*, in order to raise again the price of dollars in the foreign-exchange market and thereby shut off *D*'s "unfair competition" in the international markets. They may also attempt to curb *D*'s exports by imposing embargoes, quotas, licensing requirements, exchange restrictions, additional or compensatory tariffs, and various other limitations.

It is partly because of the unpredictability of foreign repercussions and partly because of uncertainty as to the behavior of the money supply and money expenditures at home that a monetary authority cannot foretell with any high degree of accuracy the effect that a devaluation of its money will exert on prices.

## CHAPTER VI

### THE INCOME AND EXPENDITURE APPROACH GENERAL PRINCIPLES

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#### INTRODUCTION

The outstanding event in the history of monetary theory since the World War has been the rapid development and rise in popularity of the income and expenditure approach to the explanation of the interrelationships of money, prices, and business activity. Previously, this type of theory had been largely eclipsed by other approaches to the problem, and especially by the various forms of the quantity theory. But in the writings of such outstanding economists as Wicksell, Aftalion, Schumpeter, Hawtrey, Robertson, Keynes, and many others it has been elaborated and discussed to such an extent during the postwar period that it now occupies a dominant position in monetary analysis. Not only has it crowded out of the pages of learned economic journals virtually all discussion of competing approaches to the problem, but its terminology—if not its rigorous analysis—is being widely adopted by government officials, journalists, and laymen.

The great popularity of the income and expenditure approach derives not from the substance of this theory but from its logical framework. In explaining the interrelationships of money, prices, and business activity, it deals with the same factors considered by the quantity theorists—the quantity of money available, the speed with which this money is spent, and the physical volume of goods produced and sold for the flow of money expenditures. But because it is stated in terms of such basic eco-

nomic operations as producing goods, receiving an income, spending for consumption goods, saving, investing, creating and destroying money, and hoarding and dishoarding, it seems more closely related to human decisions and actions, it can be integrated with the general economic theories of value and distribution to an extent not possible with other forms of monetary theory, and it is by far the most useful approach available for analyzing the monetary aspects of business cycles.

#### **THE ORIGIN OF THE INCOME AND EXPENDITURE APPROACH**

Though the income and expenditure approach attained its dominant position in monetary theory only recently, its roots go back at least as far as the eighteenth century. During the nineteenth century it seems to have been kept alive by—and perhaps even owes a large part of its present popularity to—the heated controversy that has raged around the most persistent questions in economics “Does the capitalistic economy operating under a monetary system generate sufficient money incomes to take off the market at remunerative prices all the goods that it is capable of producing? Or is there a deficiency of purchasing power that leads to underemployment of labor, capital, and natural resources, with the result that production is not allowed to reach and continue at capacity levels? And even if the economic system does generate sufficient money incomes to purchase at remunerative prices its capacity output, do those money incomes always become effective demand in the market?” A brief examination of the issues and arguments involved in this long-continuing controversy will help to explain the origin and nature of the present income and expenditure approach to monetary theory.

Opinion as to the sufficiency or deficiency of purchasing power has been divided into two main categories that of the classical economists who, until recently at least, have dominated economic thought and have denied the existence and some-

times even the possibility of a deficiency of purchasing power, and that of the dissenters. The dissenting group, whose members often disagree completely on other matters, have had one contention in common that under the capitalistic system money expenditures can be so deficient as to bring about unemployment and prevent the economic system from operating at its maximum capacity. They disagree, however, regarding the frequency and seriousness of this alleged deficiency. Some of the milder dissenters point out that purchasing power can be deficient, as shown by the occurrence of periods of recession and depression, but they admit that it can also be sufficient, as is indicated by the recurrence of prosperity. More extreme members of the group insist that the deficiency is chronic—that there is a continued tendency toward "general overproduction," "a glut in the market," or "underconsumption." The depressing effect of this tendency is obvious to all in periods of cyclical depression, what is not so obvious, they contend, is that even in so-called prosperity periods the insufficiency of purchasing power prevents production from reaching the very high levels which the accumulation of capital and the advance of technical knowledge have made possible.

Different dissenters have advanced varying explanations of this alleged tendency toward general overproduction or deficiency of aggregate demand. Some have suggested that it is traceable to the tendency in an expanding economy for total productive ability to advance more rapidly than money expenditures for output, which leads to falling prices, decreased profitability of production, and thence to unemployment. A large majority, however, have attributed the alleged deficiency of aggregate demand to the act of saving, though they differed again as to the way in which saving rendered total demand deficient. Some assumed simply that savings were hoarded, so that this part of the community's income did not return to the market as effective demand. Others advanced the more elaborate

argument that the act of saving tended to bring about general overproduction because of its double-edged effect of diminishing the demand for consumption goods at the very time that it was increasing the ability of the economy to turn out these goods. Most of the dissenters have agreed, however, that the deficiency of total demand due to saving was at least aggravated and was probably caused by the prevailing inequalities in the distribution of wealth and income.

In contrast to the dissenters' pessimistic view that there was a tendency toward a deficiency of purchasing power and that this constituted a "fundamental flaw in the price system," the classical economists declared optimistically that general overproduction or a "general glut of the market" was impossible. The term "general overproduction" was used in several senses, however. It was employed by some to denote excessive production relative to the desires of people for economic goods in general. The classical economists rightly denied that general overproduction in this sense has ever existed. They often quoted with approval Adam Smith's statement that "The desire for food is limited in every man by the narrow capacity of the human stomach, but the desire of the conveniences and ornaments of building, dress, equipage, and household furniture, seems to have no limit or certain boundary."<sup>1</sup>

That there has never yet existed an economic system capable of turning out more economic goods than people desire is unquestionably true. Yet the central question at issue here is not whether total production has ever been excessive relative to human desires for goods, it is, instead, whether total production has tended to be so large relative to the effective demand in the market that enterprisers find it unprofitable to employ fully all the available factors of production and to expand output to capacity levels. The classical economists also denied that gen-

<sup>1</sup> Quoted by David Ricardo in his *Political Economy and Taxation*, Chapter XXXI.

eral overproduction in this sense could exist They admitted readily that overproduction of a particular commodity or even of a group of commodities could easily occur as conditions of supply and demand shifted, but they asserted that overproduction of some goods was balanced by underproduction of others, so that only misdirected or badly apportioned production, and not general overproduction, resulted Speaking in terms of barter, they pointed out that since labor is distasteful and will be performed only for a material reward, people produce goods only for the purpose of consuming them or of using them for the purchase of other goods, therefore, the supply of goods constitutes the demand for goods, and any increase in total supply is, when viewed from the reverse side, an equivalent increase in total demand To assume that people would labor to produce goods that they wished neither to consume nor to trade for other goods was, in their view, patently absurd But though this analysis was couched in terms of barter, they held that the use of money as an intermediary in trade did not in any way weaken their argument, for trade is essentially barter, even in a money economy Goods are sold for money, which, in turn, is used to purchase other goods As J B Say put it,

a product is no sooner created, than it, from that instant, affords a market for other products to the full extent of its own value When the producer has put the finishing hand to his product, he is most anxious to sell it immediately, lest its value should vanish in his hands Nor is he less anxious to dispose of the money he may get for it, for the value of money is also perishable But the only way of getting rid of money is in the purchase of some product or other Thus, the mere circumstance of the creation of one product immediately opens a vent for other products<sup>2</sup>

<sup>2</sup> A Treatise on Political Economy, 4th edition, translated from the French by C R Prinsep, Phila., 1830, Chapter XV, "Of the Vent or Demand for Products"

Similar statements are easy to find in the writings of other classical economists<sup>3</sup>

To support their contention that demand could not be deficient, classical theorists had to show that none of the phenomena suggested by the dissenters could lead to a deficiency. Hoarding of money received for goods was often ruled out by assumption, as we have seen, Say contended that the seller of a good is "anxious to dispose of the money he may get for it, for the money is also perishable." How the seller would behave if he expected money not only to maintain its value but also to appreciate was not explained. Others who recognized that hoarding does sometimes occur held that this would not reduce "purchasing power," for prices—and presumably costs—would fall enough to allow the entire capacity output to be purchased with the remaining money expenditures. Nor could saving lead to a deficiency of purchasing power, to save is not, they contended, to hoard money nor to reduce total demand for output, to save is merely to allow a part of one's income to be used in purchasing capital, rather than consumption, goods. This contention that an act of saving is always and necessarily coupled with a corresponding expenditure for new capital goods will have to be scrutinized later. They also denied any tendency for a deficiency of purchasing power to arise from a more rapid increase of production than of money demand. Different lines of reasoning underlay this denial. Some maintained that whenever increased money expenditures were needed they would be forthcoming. In this vein Say wrote,

There is always money enough to conduct the circulation and mutual interchange of other values, when those values really exist. Should the increase of traffic require more money to facilitate it, the want is easily supplied, and is a strong indication of prosperity—a proof that a great abundance of values

<sup>3</sup> For a description and criticism of the classical approach to this problem, see P. W. Martin, *Maintaining Purchasing Power*, London, 1931, Chapter I.

has been created, which it is wished to exchange for other values In such cases, merchants know well enough how to find substitutes for the product serving as the medium of exchange or money by bills at sight or after date, bank-notes, running-credits, write-offs, etc as at London and Amsterdam<sup>4</sup>

Other members of the group, though not sharing this optimism as to the automatic adjustment of the means of payment to the volume of production, nevertheless held that an increase of total production would not lead to a glut, for prices would be reduced sufficiently to permit all the greater quantity of goods to be taken from the market It must be noted that this contention is valid only if costs can be lowered quickly enough to prevent any decrease in the profitability of business that would lead to unemployment

Who was right in this controversy, the classical economists or the dissenters? As this matter is to be discussed later at some length, only a few general observations need be made at this stage No decisive victory can be awarded to either side, serious errors have been made by both The classical economists were undoubtedly too optimistic in denying the possibility of a deficiency of effective purchasing power, they applied an essentially long-run analysis to short-term phenomena, they failed to recognize the disturbing effects of hoarding, they assumed that saving always leads to an equivalent investment in new capital goods, and they overestimated the ease and speed with which money costs adjust themselves to a falling price level But if the classical economists were too optimistic, at least the extreme dissenters, who denied that expenditures could ever be sufficient, were too pessimistic For, as will be seen, though the volume of money expenditures is sometimes "deficient," it is also on occasion not only "adequate" but even "excessive" The classical economists, despite their errors, performed a useful service in pointing out that over a longer period there is

\* *Ibid*

a sort of central tendency for demand to be sufficient to purchase all of the goods that the economic system is capable of supplying If this were not true, it would not have been possible to find a market for the tremendous enlargement of output that has occurred since the beginning of the industrial revolution

It is easy to see how the income and expenditure approach arose out of the controversy just described To discover whether or not purchasing power could be deficient required an analysis of the nature and origin of income, the ways in which it can be utilized and the effects of each method of its utilization, the nature of the demand for output, and the relation between the size of this demand and the size of the social income These are the materials out of which the income and expenditure approach is constructed

#### MONEY INCOME AND MONEY DEMAND FOR FINISHED OUTPUT

It is necessary, before entering into the income and expenditure analysis, to call attention to a few outstanding characteristics of a capitalistic economy and to a few convenient assumptions and distinctions We have already noted that in modern economic systems based on specialization and exchange most enterprisers produce goods and services, not for the use of themselves and their dependents, but for sale to others There are some exceptions, of course—the most important of these is the farmer who produces some of the things that he consumes—but in the discussion which follows it is assumed that all production is for the market The small degree of inaccuracy introduced by this assumption is more than compensated by the gain in understandability It is also convenient to distinguish between income receivers and enterprisers, or more accurately, between the functions of receiving and disposing of incomes and the function of making decisions as to the types and amounts of production to be undertaken Though enterprisers do receive incomes, the two functions of disposing of

incomes and of deciding upon production policies are based upon such different criteria that they must be distinguished, even when performed by the same person

Another fact, already noted but important to keep in mind here, is that under the capitalistic economy the volume of production undertaken depends upon enterprisers' expectations of profits. The term "profits" may be defined generally, but specifically enough for present purposes, as the excess of the value of output over costs. Each enterpriser pushes production to that point which he anticipates will maximize his profits. Or if there is no scale of output which promises to yield a positive profit, he pushes production only to that level which he expects to minimize his losses. As a result, enterprisers give full employment to the available factors of production only if their anticipated profits are maximized with production at that level. Full employment cannot be achieved or maintained so long as costs and the anticipated value of output stand in such relationship to each other as to maximize profits with production at a lower level.

But what are the natures and interrelationships of money incomes, costs, profits, and the money demand for output?

**Definitions of Money Income**—The money income of a community in any period may be defined as the money value of production during that period or, as it is sometimes stated, the value added by production during the period. This money income may, however, be looked at from two different points of view. It is perhaps most common to view it as the aggregate money value of the distributive shares accruing to the various groups that are permitted to participate in the fruits of production. But for some purposes it is more enlightening to view it as the aggregate of values produced during a period. The point must be emphasized that both methods give the same result. In the first case we add up the money values of the individual shares accruing to the income recipients; in the second, we

consider the total money values produced and available for sharing. Before proceeding to analyze money income from these two points of view, we must note that the definitions and discussions hereafter will relate to gross rather than net income, for deductions are not made to cover the depreciation of durable capital on account of current use.<sup>5</sup>

Viewed as the sum of the shares accruing to the various groups participating in the rewards of economic activity, the money income of the community in any period is composed of two principal parts (1) enterprisers' costs paid out to the factors of production in both the consumption and the investment goods industries, and (2) enterprisers' profits in both the consumption and the investment goods industries, or the excess of the value of output over costs. By far the larger part of money income is made up of costs paid to productive factors in the form of wages, salaries, interest, and rent. Wages and salaries enter the incomes of employees, rents go into the incomes of those who have hired out property, and interest swells the incomes of those who have lent their money. For enterprisers as a group, allowance for depreciation and obsolescence is the only item included in costs that does not automatically become someone's income. And even this item enters into money incomes as wages, salaries, rent, interest, or profits to the extent, but only to the extent, that it is used to repair deteriorating equipment or to purchase replacements. Thus the volume of money income in the form of enterprisers' costs varies with enterprisers' expenditures for productive factors to further the creation of consumption goods and of investment or capital goods, whether these capital goods are for repairs and replacements or for net additions to the capital supply. Increases or decreases in these cost expenditures by enterprisers are, from the point

<sup>5</sup> For an enlightening discussion of the meaning of gross and net income, see Simon Kuznets, *National Income and Capital Formation, 1919-1935*, New York, 1937, pp. 37 and 36-37. The definition used here corresponds closely to Kuznets' Variant I.

of view of their recipients, corresponding changes in money income For present purposes governmental units must be included among enterprisers Their primary purpose is not, of course, pecuniary profit, but they produce goods and services ranging all the way from bridges to justice, they generate money incomes by making payments to labor and other productive factors, and they are capable of swelling or shrinking money incomes by increasing or decreasing their expenditures

The other part of money income is made up of enterprisers' profits, which are the excess of enterprisers' receipts for output over the costs of producing that output<sup>6</sup> The magnitude of enterprisers' profits depends, therefore, upon the relative magnitudes of receipts for output and of costs of production, and they may be either positive or negative These profits (or losses) appear first in the hands of business enterprises If they are positive, a part and sometimes all of them may be quickly passed along as income to the owners of enterprises Frequently, however, enterprises retain or "plow in" a part of their realized profits, in this way they act as savings agencies for their owners, whether all their owners desire it or not Later it will be shown that the retention of profits by enterprises may or may not affect the flows of money expenditures for output and of money incomes It is sufficient to note here that though a part of the money income in the form of profits is placed at the disposal of the individual owners of enterprises, the remainder is at the disposal of the enterprises themselves

Perhaps it should be added that when enterprises pay out to their owners, as they sometimes do, amounts in excess of the current profits of the period, neither the total income of the period nor expenditures for output are immediately affected, the immediate result is merely that the funds are placed at the

<sup>6</sup> This definition assumes that profits are not realized until sales are actually made It does not take into consideration "profits" or "losses" traceable to revaluation of assets held These revaluations are ignored here because we are interested primarily in the value and costs of current output.

disposal of the individual owners rather than of the enterprises themselves. Such a policy may lead indirectly to alterations in total expenditures for output, however.

The community disposes of its money income in two principal ways. It uses a part, ordinarily by far the larger part, to purchase new consumption goods. This will hereafter be called "consumption." The other part it "saves." It is important to note carefully the meaning of "saving" as used here. Saving means merely the failure to spend all of one's money income for consumption, and the volume of savings out of current money income is equal to total money income minus consumption. Saving is, then, the purely negative function of not spending for consumption; it does not indicate what use is made of the funds saved.<sup>7</sup>

Though, as we have seen, money income may be defined as the sum of the distributive shares accruing during a period, it may also be defined as the aggregate value added by production during the period. This money value of production may be divided into two broad categories—consumption and investment. By consumption is meant the money value of new finished consumption goods sold in the period. By investment is meant the money value of new finished investment goods sold in the period, plus any net increase in the value of enterprisers' inventories of unsold goods, or minus any net decrease in these inventories. By far the larger part of investment in any period is made up of finished investment goods sold, and most of the fluctuations in investment represent fluctuations in these sales. Changes in investment traceable to variations in enterprisers' inventories are usually of a smaller magnitude.

It follows that if enterprisers as a group keep their inventories of unsold finished and partially finished goods at a fixed level, neither adding to nor subtracting from their total, the money

<sup>7</sup> The definition of saving will be refined later to take into account the element of time.

income of the community in any period is equal to the money expenditures for finished consumption and investment goods sold at the final stage, and the size of money income varies from period to period with the total of these expenditures. The money income of the community can rise above or fall below the level of expenditures for finished output only by an amount measuring the net increase or net decrease in the value of enterprisers' unsold inventories during the period.<sup>8</sup> This is true whether income is measured as the total value added by production or as the sum of the distributive shares. When enterprisers make a net addition to their inventories, total production is greater by an equivalent amount than the value of finished goods sold. This excess appears in distributive shares as cost payments to the productive factors used to expand inventories. When enterprisers effect net reductions of unsold inventories through failing to replenish them as rapidly as sales are made, the total value of production during the period is less than the value of goods sold by an equivalent amount. This reduction is manifested in distributive shares as smaller cost payments to productive factors than would have occurred if inventories had been kept intact.

Before proceeding to discuss the way that money income behaves and the reasons for its behavior, it may be well to pause long enough to summarize our findings up to this point. These are (1) By the money income of a period we mean the money value of production during that time. (2) This money income may be defined either as the aggregate of the values produced—that is, as consumption plus investment—or as the sum of the distributive shares accruing to those who participate in income, both definitions amount to the same thing. (3) The magnitude of money income depends upon

<sup>8</sup> It is assumed here that goods in inventories are valued at the costs incurred for them up to the stage of completion that they have reached at the time of valuation.

the behavior of the circular flow of spendings—consumers' and investors' spendings for new consumption and investment and enterprisers' spendings for the factors of production An expansion of this circular flow of spendings means an expansion of money income, a contraction of these spendings means a contraction of money income

**The Behavior of Money Income**—Our task now is to discover by what process and for what reasons fluctuations in money income occur To do this we must trace through, step by step, the creation and disposal of money income and the relationships between savings and investment

In order to examine microscopically or—what is perhaps a better analogy—to photograph in slow motion the processes of creating and disposing of income, time will be divided into "periods" A period, in the special sense in which it is used here, is of such length that though one can receive an income in it he cannot dispose of that income, that is, he cannot spend it for consumption or "save" it, until the following period Thus, income received in period 0 cannot be spent or saved until period 1, income received in period 1 cannot be spent or saved until period 2, etc<sup>9</sup>

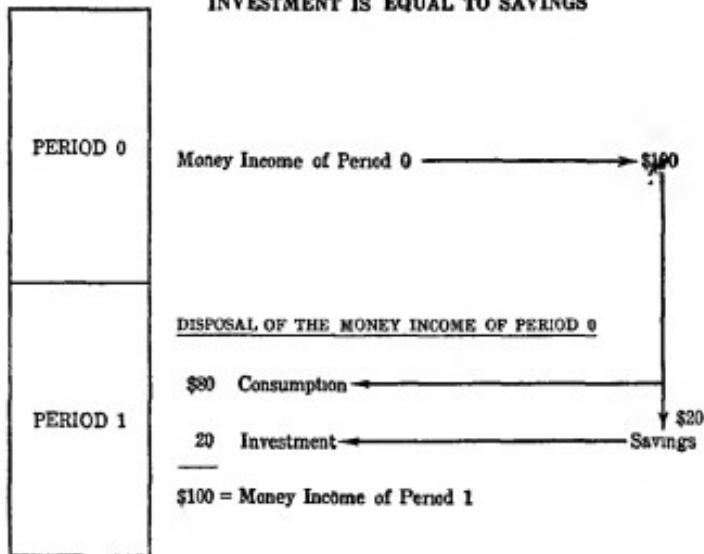
This slow-motion photography will be used on three types of cases (1) that in which money income remains constant from period to period, (2) that in which money income shrinks from period to period, and (3) that in which money income expands from period to period In each case we shall assume that the money income of period 0 is \$100 It will also be

<sup>9</sup>This expositional device is taken from D H Robertson, "Saving and Hoarding," *The Economic Journal*, September, 1933, pp 399-413 What is here called a "period" is similar to Robertson's "day" This division into distinct periods of what is essentially a continuous process may seem to make the analysis unrealistic However, it is the most fruitful method yet developed for analyzing the process of change in money incomes, and it distorts the picture but little

convenient, though not necessary to the validity of the explanation, to assume that we start with a situation in which the economic system is operating at or near capacity levels, and in which costs of production, money expenditures, and profits are so adjusted as to justify, from the enterprisers' point of view, the continuance of business activity at the existing level.

**Stable Money Income**—Money incomes can remain stable from period to period if there is no net change in the money supply and no net hoarding or dishoarding, or if changes in the money supply and in hoarding or dishoarding are such as to offset each other. This amounts to saying, as will be shown, that money income will remain stable so long as investment in one period is equal to savings out of the income of the preceding period. This fact is shown in the accompanying example.

**STABLE MONEY INCOME  
INVESTMENT IS EQUAL TO SAVINGS**



When the \$100 money income of the community in period 0 becomes available for disposal in period 1, it is utilized in two ways A part of it, ordinarily a large part, is spent for new consumption goods Let it be assumed that \$80 is used for consumption The other part, in this case \$20, is saved Saving has already been defined as the failure to spend income for consumption, the definition is now refined to state that saving is the failure to spend a part of income for consumption in the period in which that income becomes available for disposal The positive action of spending for finished new investment goods is investment This does not include the purchase of securities or of second-hand goods or the depositing of money with financial institutions, though by such actions savings are transferred to someone who may, but need not necessarily, invest them It will be emphasized later that investment in any period may exceed or fall short of savings out of the income of the preceding period, and that the results of such divergences are far-reaching The present case is that of stable money incomes, however, and this condition requires that the entire \$20 saved be spent for investment If investment does equal savings, the value of new finished consumption and investment goods sold—which is the same as enterprisers' receipts for finished output—will be \$100, an amount equal to the income of the preceding period A part of these enterprisers' receipts for finished output is profit—the excess of the selling price over the costs of producing the goods sold—and as such becomes immediately a part of the money income of period 1 The total money income of period 1 can continue at the level of \$100, however, only if enterprisers keep constant their inventories of unsold goods, that is, if they pay out as costs during the period an amount equal to the costs of producing the finished goods sold during the period<sup>10</sup>

<sup>10</sup> Fluctuations in the net value of inventories (valued at cost) are con-

The general conclusion indicated by this example is that money income can remain constant from period to period only if investment in each period is exactly equal to savings out of the income of the preceding period. And this requires that there be no net hoarding and no net decrease in the money supply, or that hoarding or dishoarding and changes in the money supply, if they do occur, be such as to offset each other.

So long as the above conditions are met, the flow of money income will remain at the rate of \$100 per period. If the output of consumption and investment goods is at the rate of 100 units in period 1, the average price per unit will be \$1, and it will continue at that level if output is constant. This price is high enough to cover costs of production, if they remain properly adjusted, and still leave to enterprisers sufficient profit to justify the maintenance of high-level production. But if physical output rises above 100 units per period while the rate of expenditure remains unchanged, the average price per unit must fall. Whether or not such a price decline will lead to a failure of enterprisers to employ all the available factors of production depends upon whether or not costs of production adjust themselves in such a way as to preserve enterprisers' prospective profits. If the enhanced productive power emanates solely from new inventions and improved methods of organization and administration which increase the average output per

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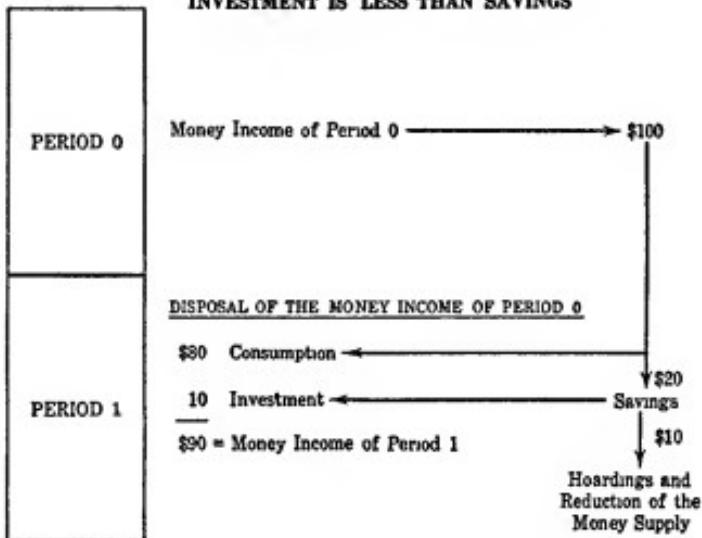
sistent with a stable money income only if accompanied by equal and opposite changes in the value of finished consumption and investment goods sold. It is possible, of course, for inventories to vary in such a way as to decrease the variation of money income. When the value of finished goods sold declines, enterprisers can add to their inventories and cushion the fall. And when the value of finished goods sold rises, enterprisers can draw down inventories and retard the rise. At least as often, however, inventories vary in such a way as to amplify variations of money income traceable to fluctuations in money expenditures for finished goods.

unit of labor and capital, no difficulty is necessarily presented, if hourly rates of pay to the factors of production are not raised the greater quantity of output can be produced at the same aggregate cost as before, so that the volume of enterprisers' profits need not fall despite the decrease in the average sale price per unit. The decline in the price per unit is offset by the reduced cost per unit. If, however, the increase in the productive power of the economy is traceable not to greater average productivity of production factors but rather to an increase in the supply of these factors, full employment can be maintained only by (a) a sufficient downward adjustment of the rates of pay to production factors to lower costs per unit and to preserve enterprisers' profits, or (b) a sufficient expansion of money expenditures, by methods to be described later, to offset the increase in aggregate costs, or (c) a combination of (a) and (b). In an economy in which rates of pay to production factors adjust downward only slowly, adjustment can probably be made with less friction by means of (b). The general conclusion must be, then, that economic equilibrium at full employment may be attained with money expenditures for output continuing at a fixed level if the volume of output is constant or increases only as a result of greater productivity of the existing factors of production. But in an economy in which downward adjustments of rates of pay are effected only with great difficulty it is probably desirable to increase the money demand for output in order to absorb into the economic process larger supplies of labor and capital.

The Contraction of Money Income—Money income will shrink from period to period so long as investment in each period is less than savings out of the income of the preceding period. And investment may fall below savings either because

of a net reduction of the money supply or because of "hoarding." Savings are "hoarded" if they are held in money balances for such a time as to prevent them from flowing back into money incomes in the period in which they are saved. In effect, hoarding is the same as a reduction of the circuit velocity of money. The way in which investment is depressed below savings through the destroying and hoarding of money is best explained by the type of analysis used in the preceding case. We again break into the economic process in period 0, in which money income is \$100.

When the \$100 money income of period 0 becomes available for disposal in period 1, a part of it—again let us suppose \$80—is spent for consumption. The remainder, \$20, is saved. Though all of savings may be invested, as was shown in the preceding case, it is clear that this need not occur, for there are other ways in which they may be used. A part may be used to reduce the money supply, thereby disappearing from the economic system. This most frequently occurs through the commercial banks. Savers themselves may use a part of their savings to repay bank loans, and the banks, by permitting the total volume of their credit to fall, allow the money savings to vanish into thin air. The same results are achieved if enterprises or governmental units borrow the savings of the community and use them to reduce bank loans, or if savers and persons or institutions to whom savings are transferred use them to purchase from the banks securities or other assets which the banks do not replace. Savings may also disappear from a national economy through being used to finance a net export of money to other countries, or, in infrequent cases, through being used by the government to retire money issues.

*An Introduction to Monetary Theory***CONTRACTION OF MONEY INCOME  
INVESTMENT IS LESS THAN SAVINGS**

Savings may also be bottled up and prevented from entering investment by net hoarding, either by savers themselves or by others. A saver may merely add some of his current savings to his money balances in the form of cash or checking deposits and hold them until a later period. He may use a part of his savings to repay borrowings from persons or institutions other than commercial banks, who, in turn, hold the money instead of spending it for consumption or permitting it to be invested. He may use some to purchase old securities or other old investment assets from sellers who hoard the savings so transferred to them. He may intrust them to financial institutions other than commercial banks, which hoard the funds to increase their liquidity. And even if they do find their way into the hands of commercial and industrial enterprises through the setting aside of depreciation and obsolescence allowances, the retention of profits, or the sale of securities to the com-

munity, they may still be employed not for investment but for the swelling of money balances held

The value of finished output sold in any period will fall below the money income of the preceding period by a margin equal to the net amount of savings used not for investment but for hoarding and for reducing the money supply. For example, if \$5 of the \$20 savings out of the income of period 0 are used for hoarding and for reducing the money supply, only \$15 will be available for the purchase of new finished investment goods, and the total value of finished investment and consumption goods sold will be only \$95. The money income of period 1 will also be reduced to \$95 unless enterprisers add \$5 to the net value of their unsold inventories. And instead of buoying up money income by expanding their inventories, enterprisers may well shrink incomes still further by effecting a net reduction of their inventories. This is likely to occur when they expect the money demand for finished goods to continue at the new lower level, and particularly when money demand is expected to fall still further. If enterprisers should effect a \$5 net reduction of their inventories, adding that amount of their money receipts to their hoards or using it to reduce the money supply rather than to replace the goods sold, investment in period 1 would be only \$10, and the money income of the period would be only \$90. The \$10 decline of money income below the level of period 0 represents the excess of savings over investment, and this excess measures the net amount of savings hoarded or used to reduce the money supply.

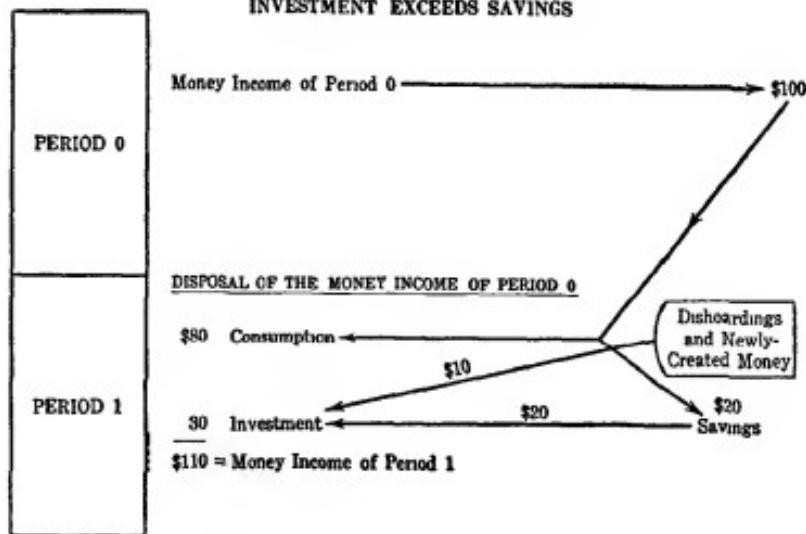
The general principle illustrated by this case is that money income will decline from period to period so long as savings exceed investment. Such declines cannot fail to be disastrous in a capitalistic economy in which goods and services are produced to be sold in the market. The real or physical income

usually declines less than money income and the money value of output, for to some degree enterprisers lower prices and maintain production. But in an economy in which many costs can be lowered only slowly and with difficulty and in which some enterprisers refuse to reduce prices significantly regardless of decreases in costs, a large part of the shrinkage of money demand is manifested in reduced employment, shrunken production, and diminished real income. It was this thoroughly unreasonable situation that the dissenters had in mind and that the classical economists largely neglected. While people desire earnestly and many suffer painfully for lack of the necessities and conveniences of life, productive facilities capable of satisfying these needs lie idle solely because of inadequate "demand." Thus, saving—the mere failure to spend for consumption—does not necessarily and automatically augment the capital supply and increase the productivity of the economic system. When it fails to materialize in investment, it serves instead to depress business activity, to lead to unemployment of productive facilities rather than to their employment in the creation of capital goods, and often to an actual deterioration of physical capital. This contrast between the economics of the system as a whole and the economics of the individual enterprise is most striking in the case of depreciation and obsolescence allowances. In the opinion of an individual enterpriser, he is keeping his "capital" intact at least as surely by hoarding money representing estimated depreciation and obsolescence or by using it to retire bank loans as he would be by repairing or replacing equipment. But from the social point of view, "capital" is not being conserved, hoarding or destroying money does not paint buildings, or repair worn machinery, or replace obsolete equipment. Paradoxical as it may seem, the quickest way for a whole people to impoverish itself is

to refuse to spend its money. Saving can be both "a private virtue and a public good" only if it is accompanied by investment.

**The Expansion of Money Income**—Money income can expand from period to period for a reason just the reverse of that leading to a shrinkage—an excess of investment in any period over savings out of the income of the preceding period. And investment can exceed savings either because of a net increase in the money supply or because of dishoarding. Dishoarding is the opposite of hoarding. It occurs when members of the community, including enterprisers, draw upon their money balances held at the beginning of the period to spend for consumption and investment an amount greater than their money income of the preceding period. In effect, dishoarding is the same as an increase in the circuit velocity of money. The process of expansion is best explained by the type of analysis used in the two preceding cases.

#### EXPANSION OF MONEY INCOME INVESTMENT EXCEEDS SAVINGS



When the \$100 income of period 0 becomes available for disposal in period 1, a part of it—again let us suppose \$80—is used for consumption, and the remainder is saved. But though only \$20 is saved, \$25 is spent for finished new investment goods, so that total expenditures for finished consumption and investment goods are \$105. What is the source of the additional \$5? Some or all of it may emanate from an increase in the money supply, which can be effected in any of several ways. There may be net imports of money from abroad. The government or the central bank may emit additional paper money or issue new metallic coins. Most frequently, however, sizable increases in the money supply are traceable to the actions of commercial banks. By expanding their loans or by purchasing securities they can put into the hands of the community new money that can be spent sometimes for consumption but much more often for investment.

The additional expenditures may, however, result from dishoarding. Individuals may draw down their money balances to purchase new consumption goods or to make their money available for investment. Financial institutions, such as investment trusts, insurance companies, and savings banks, may also dishoard as they come to feel that prices of securities are not likely to fall and may rise, so that it is a wise business policy to hold a larger proportion of earning assets and a smaller proportion of sterile money. And industrial and commercial enterprises may sacrifice liquidity in order to buy finished investment goods. Dishoarding, especially by financial institutions, industrial and commercial enterprises, and wealthy persons, is a very rich source of additional spendings at the end of long and serious depressions in which hoarding has been widespread.

If spendings for new finished investment goods exceed by \$5 savings out of the income of the preceding period, the total

value of finished consumption and investment goods sold in period 1 will be \$105, and the money income of the period will be the same amount in the absence of a net reduction of enterprisers' unsold inventories. And enterprisers may well enhance the money income still further by expanding their inventories. This is likely to happen if the money demand for finished output is expected to continue at the new higher level, and particularly if it is expected to rise still further. If enterprisers as a group should make a \$5 net addition to their unsold inventories, and they can do this only by dishoarding or by using newly created money to swell their cost payments, investment in period 1 would be \$30, and money income would be raised to \$110, or \$10 above the level of the preceding period. The increase in money income measures the excess of investment over savings out of the income of the preceding period, and the excess represents net dishoardings plus the net increase in the money supply. This expansion of money income will continue from period to period so long as investment exceeds savings.

It is to be noted that the above discussion relates to the behavior of money income. How will real income react under these conditions? As a reaction against the old mercantilist emphasis upon the importance of money and the desirability of increasing the national money supply, economists have long emphasized the fact that national wealth consists, not of money, but of real goods and that the national standard of living depends, not upon the size of money flows, but upon the volume of real goods and services turned out each year by the economic system. And, as a corollary to this, they have maintained that advancement of national economic standards can be attained only through greater productivity of the economic system, it is not to be achieved through a mere multiplication of money titles. These contentions contain substantial

elements of truth, and their authors have rendered valuable service in exposing the fallacies of many get-rich-quick inflation schemes. When the economy is already operating at as near capacity levels as it can and with virtually all labor and other available productive facilities employed, even a very large expansion of spendings—whether traceable to dishoarding or to an increase in the money supply—cannot enlarge real output significantly; it will lead merely to higher prices. At such times sizable increases in real output can be achieved only by augmenting the supply of labor, capital, or natural resources, by technological advances, or by improved methods of organization and administration. Increased spendings can hardly be expected to achieve these ends.

It does not follow, however, that an expansion of money flows can never enlarge the real output or extend the real wealth of a nation. If expenditures for consumption and investment are increased at a time of considerable unemployment, the result is almost certain to be an enhancement of employment and an expansion of the real income of the community. At such times the most pressing economic problem is not to widen the potentialities of production but rather to utilize more fully the productive facilities already available. Increased money flows, if they can be induced, are capable of accomplishing this purpose.

#### THE "MULTIPLIER" AND THE "MULTIPLIER EFFECT"

We have found that the behavior of money income from period to period depends upon the relationship between savings and investment. If investment in a period is exactly equal to savings out of the income of the preceding period, money income continues at the earlier level. If investment is less than savings, money income for the period falls by a corresponding amount. If investment exceeds savings, money income rises by

a corresponding amount This analysis, it must be emphasized, applies to changes from one period to the next, the term "period" being used in the sense defined earlier Recently, however, economists have devoted much attention to the effects that an original deviation of investment from savings exerts on total money income over a duration of time containing not one but several periods This interest has been greatly increased by attempts on the part of several governments to induce a general business recovery by policies of what has been popularly referred to in the United States as "pump-priming," which usually take the form of public works programs or relief expenditures Before dealing specifically with these government policies, however, we must investigate what Keynes and some others have called the "Multiplier" and the "Multiplier Effect"

These economists have pointed out that an original discrepancy between investment in one period and savings out of the income of the preceding period may over a duration of time containing more than one period bring about an aggregate change of money income equal to several times the original discrepancy An original excess of investment over savings may over a longer time increase money income by several times the primary excess, just as an original deficiency of investment relative to savings may during such an interval decrease money income by a multiple of the primary deficiency This is what is called the "Multiplier Effect," and its magnitude relative to the original discrepancy is called the "Multiplier"

The general principle of the Multiplier can be shown by the use of the three cases already developed in this chapter together with a highly simplified assumption which will be abandoned later when we come to apply the Multiplier analysis to "pump-priming" This assumption is that if investment deviates from savings at all it does so in only the first period, so that in the

following periods considered here investment exactly equals savings, and money income continues at the level of period 1.

TABLE 4.—THE MULTIPLIER AND MONEY INCOME

	Case I	Case II	Case III
Period 1	\$100	\$ 90	\$110
Period 2	100	90	110
Period 3	100	90	110
Period 4	100	90	110
Period 5	100	90	110
Total for the five periods	\$500	\$450	\$550

Though the first case does not involve the Multiplier, it will be described in order to secure a sort of norm with which to compare the two following cases. It will be remembered that in case I it was assumed that investment in period 1 was equal to savings out of the income of the preceding period, so that money income of the period remained at \$100. If this condition persists, total money income for the five periods shown will be \$500. In case II, however, we assumed that in period 1 investment failed by \$10 to be as great as savings out of the income of the preceding period, so that money income fell to \$90. If, after this original decline, money income continues to flow from period to period without further alteration, that is, if in each subsequent period investment is just equal to savings, the total money income for the five periods will be not \$500 but \$450. The original \$10 deficiency of investment relative to savings has led to a \$50 decline of total money income for the five periods taken as a whole. The Multiplier for this length of time is five.

Case III may be used to show the Multiplier Effect of an original excess of investment over savings. In this case we assumed that investment in period 1 exceeded savings out of the income of the preceding period by \$10, so that the money in-

come of the period rose to \$110. If money income continues to flow at this new level, its total for the five periods will be \$550. The original \$10 excess of investment over savings will lead to a \$50 increase in money income for the length of time here considered. The Multiplier for this length of time is five. If each period is one-fifth of a year—that is, if the circuit velocity of money is five, the national money income for the year is increased by five times the original excess of investment over savings.

It should now be clear, from the preceding discussion of the Multiplier Effect, why a government policy of pump-priming might be expected to expand the national money income, and why the resulting expansion of national income might be several times as great as the amount of priming used. For pump-priming to occur, however, the government expenditures must represent money that would otherwise have been hoarded or that would not otherwise have been in existence at all. No net addition to money income is achieved if government expenditures merely displace private spendings. The funds used for pump-priming may be secured by taxation, by borrowing, or by the issue of money by the monetary authority. It seems probable that borrowing would interfere less with private spending than would taxation, and that borrowing newly created money from the commercial banks (assuming that the banks are kept supplied with adequate reserves) or the issue of new money by the monetary authority itself would interfere less with private spending than would the borrowing of money already in the hands of the community. Funds collected by these methods may be injected into money incomes in two general ways (1) by relief payments, and (2) by expenditures on public works. If the funds are paid out directly as doles or relief allowances, the recipients have additional money incomes which they may spend away to others, who then have more

money income to expend to still others, and so on. If the funds are paid out for the construction of public works, a part of them goes directly to workers as income and a part to enterprisers for materials. This swells directly enterprisers' receipts and encourages them to pay out additional money incomes to the factors of production. Here again an expansion of government spendings may initiate a multiple expansion of money income. If we assume again that the initial expansion of money income does not lead to subsequent hoarding or to a destruction of money from period to period and that a period is a fifth of a year, it follows that an original \$1,000,000,000 of pump-priming could expand the national money income for a year by \$5,000,000,000.

Because of this Multiplier Effect, some economists have recently insisted that government expenditures in depressions may, if they effect a net increase in money income, greatly enhance the real income of the nation, even if the original objects of expenditures are in themselves of little or no social value. Boondoggling of the purest sort, such as using one group of the unemployed to dig holes that are then filled in by others of the unemployed, may induce a great expansion of the real income of the nation by magnifying the money demand for the products of private enterprise. It need hardly be added, however, that resort to such useless projects is not to be justified where there exist so many other projects that are in themselves useful and for which expenditures exert just as large a Multiplier Effect.

**The Magnitude of the Multiplier**—Up to this point the discussion of the Multiplier has assumed that the original net increase or decrease in money income did not lead to subsequent hoarding or dishoarding or to a further change in the money supply, or that if these did occur, they were of such a nature as to offset each other. If this condition obtains and

money income continues to flow at the new level from period to period, the size of the Multiplier for any given length of time, such as a year, will depend on the length of the period. If the period is two months, the Multiplier is six, if the period is four months, the Multiplier is three. In the terminology of the income type of quantity theory discussed in Chapter III, the size of the Multiplier will, under these assumed conditions, depend on the circuit velocity of money. It is evident, however, that this assumption will not often fit the facts, an original expansion or contraction of money income is highly unlikely to be without its effects on hoarding and dishoarding and on the behavior of the money supply.

The original increment to money income may be used in part from period to period for hoarding or for effecting a reduction of the quantity of money. If this happens, the Multiplier Effect will be less than was indicated above, the increment will gradually leak away and perhaps disappear after a time. These "leakages" may occur in several ways. Money may be spent for imported goods and not return as demand for exports. Income recipients may fail to spend all the increment for consumption and investment, and instead may use some of it for hoarding or for repaying debts to banks, which permit the quantity of money to fall, or for repaying other creditors who will hoard it. Moreover, the original increase in money income, particularly if it is effected by government expenditures, may fail to induce private enterprisers to use all the available savings for investment. There may be several reasons for this. The government expenditures for materials and labor may so raise the costs of construction as to make unprofitable some private projects that would otherwise be undertaken. Government borrowing may, if not accompanied by a sufficiently liberal credit policy on the part of the monetary authority, increase interest

rates and thus discourage private investment. The government operations may also injure enterprisers' "confidence" by arousing animosity or fears of "socialization" or unchecked inflation. And the frequent lack of justification for these reactions reduces not at all their discouraging effects on investment.<sup>11</sup>

If for any one or more of the above reasons the original increase in money income does lead to hoarding or to a reduction of the money supply, the Multiplier Effect will be reduced. This is shown by the accompanying table, which is drawn up on the assumption that money income was increased \$10 from period 0 to period 1 and that thereafter one-third of the remaining increment was absorbed each time it passed from period to period. It is clear from this table that as the original

TABLE 5

Period	Money Income	Amount of the Original Increase Absorbed by Hoarding or by a Decrease in the Money Supply in the Period
1	\$110	\$
2	106 2/3	3 1/3
3	104 4/9	2 2/9
4	103	1 4/9
5	102	1
6	101 1/3	2/3

increment to money income is absorbed the energizing effects dwindle from period to period and then finally disappear. Pump-priming may yet be worth while, even if this absorption occurs, for total money income may still be increased by a multiple of the original injection. It is possible, however, that the government expenditures will injure "confidence" and dis-

<sup>11</sup> This paragraph leans heavily on J. M. Keynes, *The General Theory of Employment Interest and Money*, New York, 1936, pp. 119-120, and J. M. Clark, *The Economics of Planning Public Works*, Washington, 1935, pp. 80-112.

courage private investment to such an extent that pump-priming will actually decrease total money income

But if the Multiplier Effect of priming expenditures can be diminished by the failure of all savings to flow into investment, it can also be magnified if the original increase of expenditures induces dishoarding and an increase in the money supply. And this is likely to occur if the members of the community believe that the pump-priming policy will arrest the downswing and lead to recovery. Income receivers, anticipating steadier and perhaps enhanced money incomes, may not only spend all their increased incomes, but also dishoard or even borrow to finance consumption or to make funds available for investment. Banks and other financial institutions, sharing the more optimistic outlook, may be more disposed to release funds for investment. And enterprisers, enjoying greater receipts for output and believing that the downswing is at an end and a protracted upswing is imminent, may hasten to speed up investment. Repairs and maintenance neglected during the depression may be made at last, obsolete machinery may be replaced with improved models, and net additions to capital equipment may be undertaken to meet the expected increase in the demand for output. Thus pump-priming may, if it excites a favorable response on the part of the community, unloose large additional private spendings in each period for consumption and particularly for investment, so that the Multiplier will be very large.

Since the size of the Multiplier does depend to such a great extent upon its effects on the state of expectations of the community, it cannot be predicted in advance with any high degree of certainty.

## CHAPTER VII

# THE INCOME AND EXPENDITURE APPROACH AND THE BUSINESS CYCLE

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### INTRODUCTION

The preceding chapter described the nature of money income and outlined the processes by which it fluctuates. It was found that the money income of any period is made up of expenditures for consumption and investment, and that it varies from period to period with the total of these expenditures. The behavior of the expenditures, in turn, was found to depend upon the relationship between savings and investment. So long as they are equal, money income continues on a stable level. When savings exceed investment, money income falls by an amount equal to their difference and continues to fall as long as savings are the greater. When investment exceeds savings, money income rises by an amount equal to their difference, and continues to increase as long as investment is the greater. But why do their differences behave in such a way as to bring about the wide cumulative swings that make up what we have come to call "the business cycle"? It is the purpose of the present chapter to outline an answer to this question.

### THE RATE OF INTEREST AS EQUALIZER OF SAVINGS AND INVESTMENT

We have already seen that it is a fundamental tenet of classical economic theory that savings and investment are always equal, regardless of the proportion of income saved, and

that this adjustment is effected with productive factors fully employed According to this type of theory, savings and investment are kept in equilibrium by appropriate adjustments of the market rate of interest, which is merely another name for the price of savings The explanation offered in support of this contention is the familiar one of supply and demand The proportion of their incomes that the members of the community will save under any given set of conditions is assumed to vary directly, though not necessarily proportionally, with the rate of interest obtainable ~~the~~ any time more will be saved at high interest rates than at low interest rates Moreover, and this is an essential part of the theory, the amount of savings performed and the amount of investible funds actually offered in the market are al-

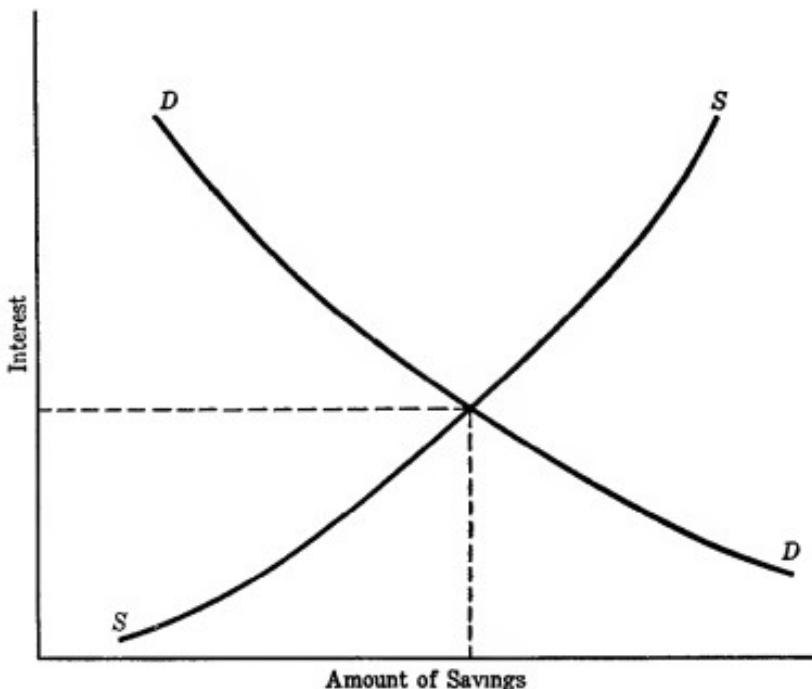


FIGURE 1

ways equal. This contention is based upon the assumptions that no savings actually made are withheld from the market and that savings represent the only source of investible funds. At any given time, therefore, there exists a supply schedule of savings, or of investible funds, such as that indicated by the curve  $SS$  in Figure 1.

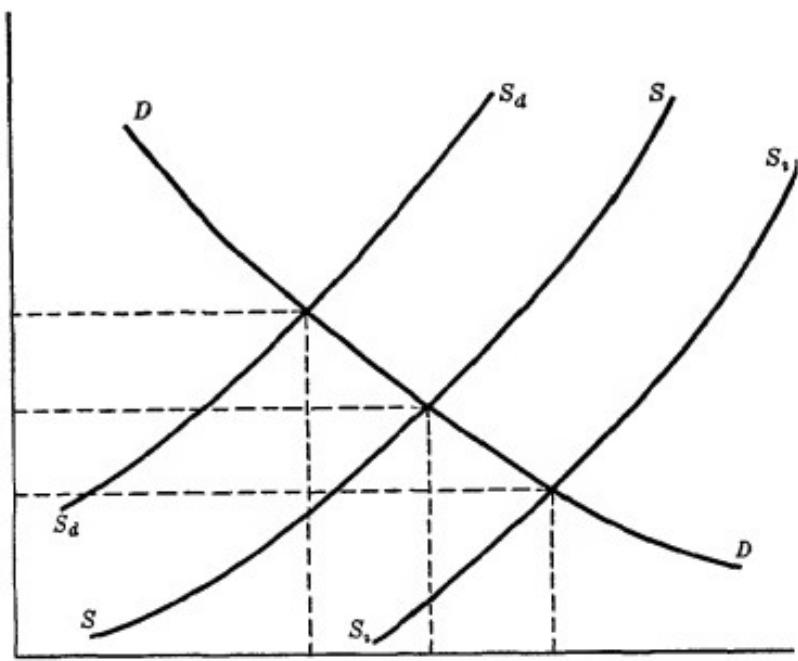


FIGURE 2

There also exists at any given time a demand schedule for investible funds, representing the amounts that would be taken at various rates of interest. Such a schedule is illustrated by curve  $DD$  in Figure 1. It will be noted that the amount taken increases as the rate of interest falls. This is owing to the fact that the demand for investible funds is based upon the amount of prospective returns to be realized from investment.

and that investment is subject to the law of diminishing returns Some investments would be worth while even at very high rates of interest, others become profitable only as the rate of interest falls

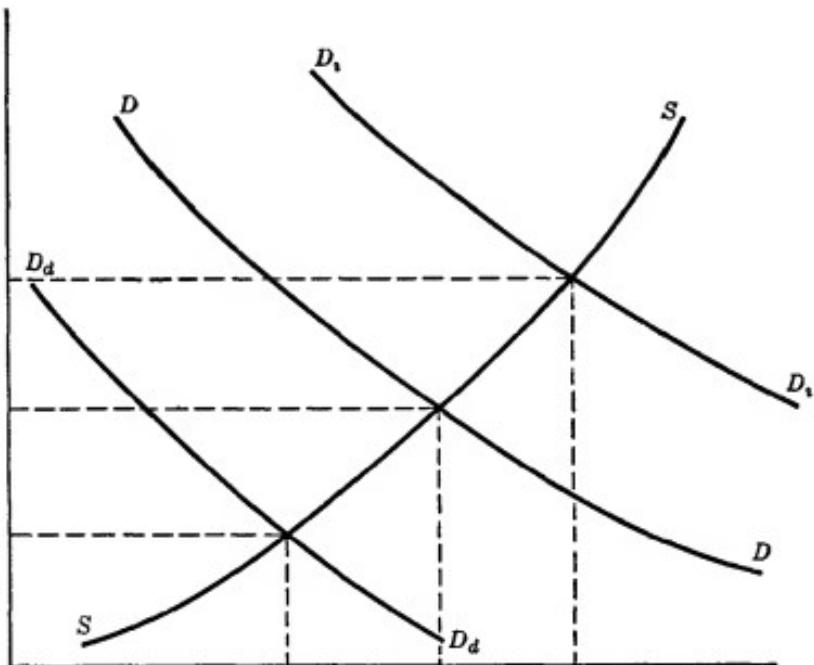


FIGURE 3

It was argued, therefore, that the rate of interest is determined by the conditions of the supply of and demand for savings, and is fixed at that level which just clears the market, or, in more recent terms, which just equalizes savings and investment with productive factors fully employed This may be called the equilibrium rate of interest It is evident that it must shift with conditions of supply and demand An increase or decrease in the supply schedule of savings unaccompanied by an offsetting rise or fall in demand must lead to a higher

or lower equilibrium rate of interest (Curve  $S_1S_1$  in Figure 2 represents an increased supply, and curve  $S_dS_d$  a decreased supply) And an increase or decrease in the demand for savings unaccompanied by an offsetting rise or fall in supply must lead to a higher or lower equilibrium rate of interest (Curve  $D_1D_1$  in Figure 3 represents an increased demand, and curve  $D_dD_d$  a decreased demand) The response of the equilibrium rate of interest to simultaneous shifts in both demand and supply depends upon the relative magnitudes of these shifts The classical economists believed that the equilibrium rate of interest would always be positive, or at least that it would be positive until the capital supply per person becomes far greater than it has ever been The rate of interest could not fall to zero or below, they contended, for as interest rates fell the amount of saving done would decline so rapidly and the amount demanded would rise so fast that the demand would exceed the supply before the rate of interest approached the zero level

Inappropriate Behavior of Interest Rates—In view of the classical economists' contention that appropriate adjustments of the market rate (or rates) of interest cause savings and investment always to be kept in equilibrium and that this adjustment is made without any departure from full employment, it is not surprising that monetary theorists who insist that savings and investment can be at least temporarily unequal and can bring about unemployment should place the blame for these divergences upon an inappropriate behavior of the market rate of interest They contend that when the market rate of interest is "too low," investment is unduly stimulated relative to saving, and this initiates an expansion of money income which is halted only when the market rate is brought back into line with prospective profits And when the market rate of interest is "too high," investment is depressed relative to savings and there is initiated a contraction of money income that is

arrested only when the market rate is brought back into line with prospective profits<sup>1</sup>

It is evident that the market rate of interest can be alternately above and below the equilibrium or appropriate rate either because the former rises and falls faster than the latter, or because it falls and rises more slowly than the equilibrium rate. There are undoubtedly cases in which the divergence is traceable to a more rapid movement of the market rate. Some of these cases will be discussed later. Much more often, however, the discrepancies arise out of the sluggishness of the market rate relative to the equilibrium rate. This is particularly true in periods of cyclical business upswing and downswing. (In the upswing, when greater expectations of profits increase greatly the demand for investible funds and the equilibrium rate of interest, the market rate of interest rises, but more slowly, so that it becomes too low relative to the equilibrium rate. And in the downswing, when the gloomy outlook for profits decreases both the demand for investible funds and the equilibrium rate of interest, the market rate falls, but more slowly, so that it becomes too high relative to the equilibrium rate.)

Why are market rates of interest such laggards? What is the flaw in the analysis offered by the classical economists? The fundamental error in this branch of classical theory lies in the mistaken belief that "savings" and "the supply of investible funds offered in the market" are interchangeable terms. This erroneous belief arises, in turn, out of two unfounded assumptions (1) that all the savings of the community are offered

<sup>1</sup> It is obviously an oversimplification to speak of "the" market rate of interest when there are actually many interest rates in the market. The validity of the argument in the text is not nullified by this simplification, however, for the divergences described arise out of inappropriate adjustments of the complex structure of interest rates, in which long term rates are the most significant as well as the most sluggish in their adjustment.

in the market for whatever interest rate they will command—that though the proportion of income saved varies with the rate of interest obtainable, none of the savings actually made are withheld from investment, and (2) that current savings are the only source of funds for investment, no funds for this purpose can be secured elsewhere. We have already discovered that neither of these basic assumptions is in accord with the facts. It is not necessary that all current savings be used for investment, for they may be disposed of in other ways, they may be hoarded, or they may be put out of existence through being used to reduce the money supply. Nor are current savings the only source of funds for investment, they may be supplemented by funds dishoarded by the community or by newly created funds resulting from an increase in the money supply. It is because of these facts that market rates of interest can get so far out of line with the equilibrium rate. Because a part of savings can be hoarded or can disappear through a reduction of the money supply, the market rate of interest can rise faster or fall more slowly than the equilibrium rate. And because savings can be supplemented in the market by funds emanating from dishoarding and from an increase in the money supply, market rates of interest can fall faster or rise more slowly than the equilibrium rate.

But why should anyone hoard sterile money rather than lend at whatever positive rate of interest he can get in the market? The answer lies partly in the fact that the market rate cannot be considered as an assured net gain. A part of it must cover the administrative costs of making and supervising the loan, and another part must cover the risk of losing principal and interest. When the market rate of interest falls so low that, in the opinion of the potential lenders, it no longer covers these costs, funds will not be made available. And the risk

of loss is likely to be estimated at a high level in a period of downswing, with its uncertainty, pessimism, and widespread defaults on principal and interest obligations. One important factor tending to increase estimates of the risk of loss on securities, and especially on long-term securities, is a fear that interest rates will rise in the future. A rise in the long-term rate of interest may lower the price of a long-term security enough to cancel several years' interest receipts. For example, a gilt-edged bond maturing in 20 years with a par value of \$1000 and paying \$40 a year interest will sell at par when the applicable long-term rate of interest is 4 per cent. But if the long-term rate of interest in the market rises to 5 per cent, the price of the bond will fall to \$875. The loss of \$125 on principal account will cancel more than three years' interest receipts. This anticipation of a rise in interest rates exerts a strong influence toward hoarding money rather than securities in depression periods, for at such times the prevailing lowness of interest rates is expected by many to be only temporary. If the risk of loss on bonds is sufficient to cause many to prefer to hoard money, it is no wonder that many would rather hold money than stocks, on which the risks are much greater.

The conditions that lead to hoarding also help to explain why savings are put out of existence through a decrease in the money supply. As interest rates fall below an amount covering the estimated costs of administering loans and the risk of loss, bankers feel that it is no longer worth their while to lend as much as formerly. Banks may also be under pressure to reduce their loans and investments in order to repay borrowings from the central bank, or to put themselves in a more liquid condition so as to be able to meet existing or threatened runs by depositors, or to repair a deficient reserve position arising out of other developments.

### THE DEMAND FOR INVESTMENT GOODS

Before discussing the effects of the inappropriate behavior of interest rates during periods of cyclical upswing and downswing of business, it is necessary to analyze the nature of the demand for investment goods, and to examine the effects exerted on it by inappropriate movements of market rates of interest.

The demand for investment goods is subject to extreme variations.<sup>2</sup> This variability derives from the purposes of these goods. Whereas consumption goods are demanded for the direct satisfaction to be realized from them, investment goods are demanded for the pecuniary return to be realized from their storage or from their use in production. And the amount that an enterpriser will offer for an investment good depends upon (1) his estimate as to the amount of pecuniary returns that the investment good will yield, (2) the length of the wait for these returns, and (3) the rate of interest at which the expected returns are "discounted." The greater the expected returns, the shorter the expected waiting period, and the lower the rate of interest at which the expected returns are discounted, the more will enterprisers offer for a given investment good. And conversely, the lower the expected returns, the longer the expected waiting period, and the higher the rate of discount, the less will enterprisers offer for the good.

We have seen that investment in any period is of two general classes (1) short-term investment, in the form of additions to goods in process in the various stages and of additions to enterprisers' inventories of unsold finished goods, and (2) long-term or fixed investment in the form of new buildings, machinery, railways and roadways, and other relatively perma-

<sup>2</sup> "Demand" is used here in the sense of a schedule of the amounts that will be taken at each of a series of prices.

nent improvements Though short-term investment composes but a minor part of total investment in any period, it will be examined first

Short-Term Investment—Enterprisers add to their holdings of inventories of finished goods and of goods in process with a view to selling them in the future, and usually in the relatively near future As a result, the amount that an enterpriser will offer in the market for a good of this type or that he will add to his costs in order to produce it within his own firm depends upon the price at which he expects to sell it later and the cost of carrying it until it is sold The carrying cost, in turn, depends upon (1) the length of time the good is to be held before its sale, (2) the height of the relevant rate of interest—the rate at which the enterpriser can borrow for the purpose if that is necessary or at which he can lend to others if he already possesses the funds, and (3) the height of other carrying costs per unit of time At any moment, therefore, the schedule of enterprisers' demand for these goods is based upon their expectations as to future prices and carrying costs But this demand is subject to wide shifts It can be increased by a rise in optimism as to future prices or speed of sales—by the birth of a belief either that prices will rise more or fall less than was previously expected or that sales at a given price can be made earlier than was anticipated—or by a fall in carrying costs Conversely, demand can be decreased by a lowering of optimism as to future prices or speed of sales or by an expected rise of carrying costs The greater part of the sharp fluctuations in demand for inventory goods is traceable to changes in expectations regarding future prices and speed of sales, for carrying costs undergo narrower and less abrupt variations Storage costs usually vary only gradually, and changes in interest rates within the normal range exert but a minor effect on demand price For example, a rise in the interest rate from 4 to 6 per cent would in itself

lower the price offered only 2 per cent if the good was expected to be held a year

Long-Term Investment—Of much greater quantitative importance is long-term investment Enterprisers invest in fixed assets, such as buildings and machinery, for the purpose of using them in production over a long period of time The anticipated return is not a sale price of the improvement itself, as was the case with short-term investments, but a series of net additions to the enterpriser's revenues during the life of the improvement It is for these expected future returns that durable capital goods are valued And the price that an enterpriser will offer for a good of this type depends upon the amount that he expects it to add to his net revenues and upon the rate of interest at which he discounts these expected returns The rate used for discounting is the relevant market rate—the rate at which the enterpriser can secure funds in the market if he is to finance the investment in that way, or at which he can lend in the market if he already possesses the funds<sup>3</sup> The process of arriving at a demand price for a capital good by discounting its expected net returns may be demonstrated by the following simple example Suppose that the investment good under consideration is expected to add to the net returns of the enterpriser, after allowances for depreciation and obsolescence, \$50 a year in perpetuity, and that the rate of discount is 5 per cent In this case, the buyer will offer not more than \$1000 ( $50/05 = 1000$ ) for the good But the price offered for the good can be shifted by changes in the expected returns, or in the market rate of interest, or by unequal changes in both If the expected annual return should rise to \$70 while the market rate of interest remained at 5 per cent, the discounted

<sup>3</sup> An enterpriser may, of course, be able to borrow or lend in the market at various rates of interest, depending upon the duration of the loan, its risk, etc The rate relevant here is the long-term rate applying to loans of comparable maturity, risk, and administrative costs

value of the good would rise to \$1400 ( $70/05 = 1400$ ) But the discounted value would fall to only \$600 if the expected annual return should decline to \$30 while the rate of interest remained at 5 per cent The discounted value may also be changed by shifts in the market rate of interest unaccompanied by proportional changes in expected returns For example, if the expected annual return remains at \$50, the discounted value will be \$1250 if the interest rate is 4 per cent ( $50/04 = 1250$ ), and only \$833 if the interest rate is 6 per cent ( $50/06 = 833+$ )

The example given above admittedly relates to the simplest case, in that expected returns are assumed to be perpetual and uniform In most cases neither of these conditions is met Nevertheless, the principle remains the same even if the actual calculation is more difficult An increase or decrease in expected returns unaccompanied by an offsetting change in interest rates will increase or decrease the demand schedule for long-term investment goods We must now discover what determines the behavior of these expected returns from investment goods

Expectations as to the Returns to Be Realized from Long-Term Investment—The net amount that the installation of a new durable capital good is expected to add to revenues is a resultant of many factors, each of which is subject to wide variations during the life of the improvement Some of the most important of these factors are listed in Table 6

One factor affecting expectations of the amount that a capital good will add to net revenues is anticipation as to the net amount that it will add to physical output This varies with the capacity of the equipment under consideration and with the steadiness and intensity at which it is expected to be utilized The importance of capacity is evident, other things being equal, a capital good capable of a large output will be valued more highly than one with only a small capacity But steadiness and intensity of operation are also important Many an improve-

TABLE 6—DETERMINANTS OF THE AMOUNT OF RETURNS EXPECTED FROM INVESTMENT IN A DURABLE CAPITAL GOOD

- I The net amount that it is expected to add to physical output
  - 1 Its capacity
  - 2 The expected steadiness and intensity of its utilization
- II The expected selling price per unit of output
- III The expected costs of operating the capital good
  - 1 Wages, taxes, etc
  - 2 The rate of depreciation and obsolescence
- IV The prevailing state of "business psychology"
  - 1 "Overoptimism"
  - 2 "Over pessimism"

ment that is considered valuable when it is expected to be utilized steadily at full capacity is valued at a very low price when it is expected to be of use only sporadically. This is a significant fact in the business cycle. In prosperity periods, when existing durable capital is already being utilized relatively intensively and when demand for output is expected to continue to rise, large numbers of enterprisers expect to be able to employ new equipment steadily. The situation is reversed, however, in periods of depression when many firms are already burdened with excess capacity and enterprisers fear that the demand for their output will decline still further.

Expectations regarding the net returns to be realized from investment goods are also influenced by anticipations as to the future selling prices of output relative to the future costs of operating the capital good. This consideration is of primary importance in the phases of the business cycle, for operating costs lag behind selling prices in both the upswing and the downswing, thereby swelling expected returns in recovery and prosperity periods and shrinking them during recession and depression.

Thus, all investment is forward-looking and undertaken for the purpose of reaping future returns, the size of which depends upon the future behavior of the various classes of phenomena just outlined. But no enterpriser can predict economic events with any high degree of certainty. He cannot know how intensively he will be able to utilize new equipment, or what price he will secure for his output five years or even a year hence, or how his operating costs will behave, or how soon the capital good will become obsolete because of discoveries and inventions. The small enterpriser is forced to stake his financial success upon more or less intelligent guesses or "hunches," while the enterpriser with the best of statistical and business forecasting services at his disposal had best view their predictions with skepticism. In view of the vagueness and scarcity of enterprisers' knowledge of the future and of the precariousness of any forecast based upon that knowledge, it is not at all surprising that enterprisers, when forming their expectations as to the future, should rely heavily upon the existing situation and upon the trend of the immediate past, and that they should assume that the prevailing situation or the trend of the immediate past will be projected into the future with only those alterations which there are discernible reasons to expect. As J. M. Keynes has put it,

It would be foolish, in forming our expectations, to attach great weight to matters which are very uncertain. It is reasonable, therefore, to be guided to a considerable degree by the facts about which we feel somewhat confident, even though they may be less decisively relevant to the issue than other facts about which our knowledge is vague and scanty. For this reason the facts of the existing situation enter, in a sense disproportionately, into the formation of our long-term expectations, our usual practice being to take the existing situation and to project it into the future, modified only to the extent

that we have more or less definite reasons for expecting a change<sup>4</sup>

This convention of projecting the present situation, and particularly of projecting the trend of the immediate past, into the future is another aggravating factor in the business cycle. In the period of upswing, an original increase in the profitability of production is likely to give birth to expectations of still greater profits, whereas in the period of downswing an original decline is likely to breed expectations of continued contraction.

Another consequence of the paucity and uncertainty of our knowledge concerning future economic events is that expectations are inordinately influenced by waves of excessive optimism and pessimism. Realizing the untrustworthiness of his own opinions with respect to the future, each person relies heavily upon the opinions of others, which are as undependable as his own. By a process that only a social psychologist can explain, the public temperament fluctuates from exultation to melancholia. At one time it exhibits the exuberance and optimism of a New Era. Then it lapses into dark discouragement and despair. In these alternating periods of overoptimism and overpessimism, enterprisers are prone to overestimate and to underestimate the returns to be realized from new investment.

It is an essential characteristic of the boom that investments which will in fact yield, say, 2 per cent in conditions of full employment are made in the expectation of a yield of, say, 6 per cent, and are valued accordingly. When disillusion comes, this expectation is replaced by a contrary "error of pessimism," with the result that the investments, which would in fact yield 2 per cent in conditions of full employment, are expected to yield less than nothing, and the resulting collapse of new investment then leads to a state of unemployment in

<sup>4</sup> *The General Theory of Employment, Interest and Money*, Harcourt, Brace & Company, New York, 1936, p. 148.

which the investments, which would have yielded 2 per cent in conditions of full employment, in fact yield less than nothing<sup>5</sup>

Fluctuations in Expected Returns and Fluctuations in the Demand for Capital Goods—For all these reasons, both objective and subjective, the community's expectations as to the amount of returns to be realized from the installation of new capital goods undergo frequent, wide, and abrupt fluctuations. We have already seen that these shifts in expectations are only rarely accompanied by proportional and offsetting shifts in the market rate of interest. As a result, they lead to wide and abrupt fluctuations in the demand schedules for capital goods. As expected returns rise faster than interest rates, the demand schedules for capital goods are raised, as expected returns fall faster than interest rates, they are lowered. These increases and decreases in demand schedules for capital goods must increase or decrease the total amount and value of these goods produced and sold—that is, investment—unless they are offset by sufficient decreases and increases in the supply schedules of the goods. Experience has shown, unfortunately, that supply schedules do not possess the necessary degree of flexibility. There are two general reasons for this lack of flexibility: (1) the sluggishness of costs, in which labor costs bulk large, and (2) the presence of monopoly power, which enables producers of capital goods to refuse to change their prices even as much as would be permitted by changes in cost levels. In industries producing and selling under conditions approximating perfect competition, the lack of adjustability of supply schedules is traceable almost entirely to the sluggishness of costs. But as monopoly elements are multiplied, supply schedules become even less adjustable, for enterprisers possessing monopoly

<sup>5</sup> *Ibid.*, p. 322

power very frequently display a marked tendency to hold their prices stable over long periods—particularly in the face of declining demand—and to let the whole force of the change in demand be absorbed by changes in the physical volume of output

In explaining why investment fails to adjust itself to savings, we have stressed the failure of market rates of interest to adjust themselves properly to the amount of returns expected from the use of capital goods. That interest rates lack the proper flexibility is undoubtedly true, and monetary economists have performed a valuable service in stressing the part that hoarding and dishoarding and the creation and destruction of money play in permitting interest rates to get out of line and to remain so. Yet it must be emphasized that a lack of proper adjustability can also be charged against many prices other than that of investible funds, and that this inflexibility of other prices increases the burden of adjustment laid upon interest rates. If operating costs—including labor costs—were more flexible, the amount of returns expected from the installation of new capital goods would rise less in the upswing and fall less in the downswing, so that interest rates would not be called upon to move so far in order to keep in line.<sup>6</sup> And if costs and selling prices in industries producing capital goods were less sluggish, shifts in demand for these goods would not lead to such great changes in their output. Other disturbing inflexibilities in prices and costs could be pointed out if space permitted. As Hansen concludes, what is needed is to make all prices and costs more adjustable; interest rates can hardly be expected to bear alone the entire burden of making all the adjustments necessary in an otherwise inflexible system.

<sup>6</sup> For an enlightening discussion of the disturbing effects of variations in the market rate of wages from "the natural wage rate," cf. Alvin H. Hansen, *Full Employment or Stagnation?* New York, 1938, pp. 147-148.

### THE BUSINESS CYCLE

We have already discussed in general terms the various elements of the income and expenditure approach to the behavior of money incomes and of the prices and production of consumption and investment goods. We shall now apply this analysis to the behavior of the physical volume and prices of output during the various phases of the business cycle. The warning must be sounded, however, that though the term "the" business cycle is employed here for convenience, no two cycles are exactly alike.

The Downswing—The analysis will begin with the phase of the cycle immediately following the crisis or downturn. The factors most likely to bring about the initial downturn will be considered later. It is sufficient at this point to note that anything causing investment in the crisis period to fall below savings out of the income of the preceding period reduces the money income of the community and is capable of initiating a cumulative downswing of business. The initial excess of savings over investment can be brought about by anything that decreases consumption without increasing investment correspondingly, or that decreases investment without increasing consumption correspondingly. The question with which we are concerned in this section is, "Why does the initial decline become cumulative rather than self-correcting?" Not every decrease of money income becomes cumulative, but we are here dealing with those that do.

The original deficiency of investment relative to savings in the period of the downturn reduces the size of the money income available for disposal in the following period. How this decrease in money income will be distributed as between consumption and savings depends upon many circumstances. Among these are the movements of the prices of investment

assets during the crisis and the state of expectations as to the future of money incomes and of the prices of consumption goods If the prices of their investment assets have fallen but little and if they expect the declines of money income and consumption goods prices to be arrested and even reversed quickly, the members of the community may decrease their consumption but little and allow the lowered money income to be manifested largely in decreased savings But if the prices of investment assets have fallen greatly so that the owners feel poorer and if employment, money income, and the prices of consumption goods are expected to continue to fall, consumption may fall much further In the downswing there are two sets of opposing forces influencing the proportions of incomes consumed and saved The shrinkage of incomes makes saving a greater hardship, but the unfavorable outlook counsels a more liberal provision for future contingencies

Nevertheless, the original decline of money income, as well as each succeeding decline, is almost certain to decrease consumption and to depress money income still further The fall of consumption curtails directly money income in the form of enterprisers' profits in the consumption goods industries, and by making unprofitable some production that was previously remunerative it leads these enterprisers to narrow the scope of their operations and to pay out smaller amounts as income to productive factors To unfortunate employees this means wage cuts, only part-time work, or outright dismissal Where costs of production per unit are inflexible or where goods are produced by monopolists or semi-monopolists who follow a policy of price maintenance, a relatively small drop in money demand may be sufficient to effect a very large reduction of employment and money income Thus, an original decrease in money income can lower consumption, which reduces still further money incomes created in the consumption goods industries, and so on

from period to period. It is conceivable, of course, that the decline of consumption would be offset by increases in invest-

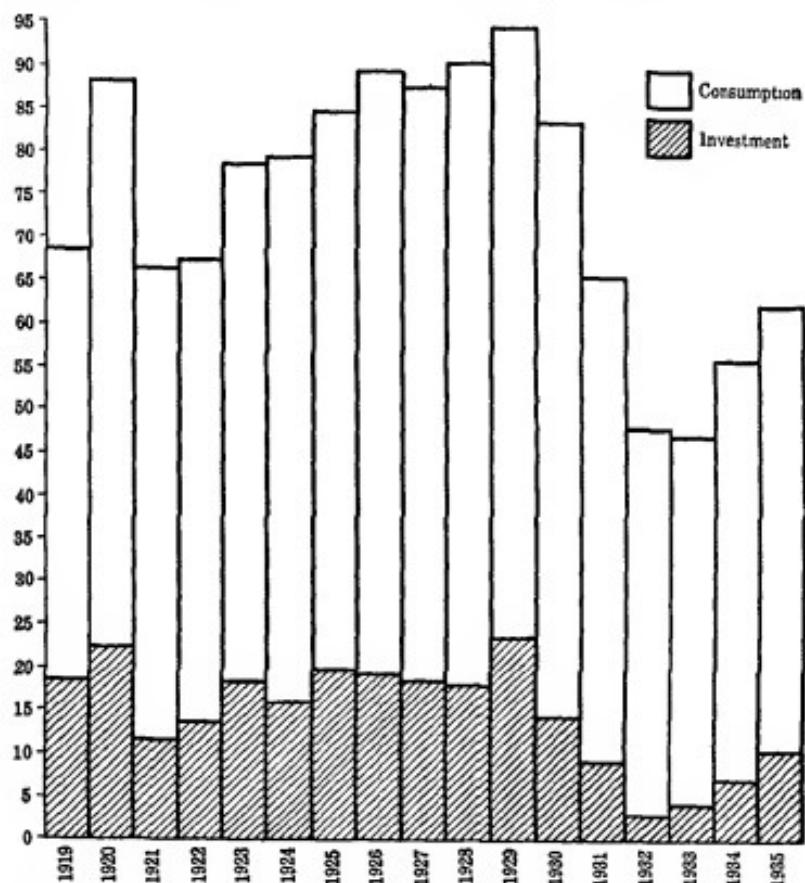


CHART VI—The National Income of the United States, 1919-1935, in Billions of Dollars

ment, but no assistance is to be had from this source during the downswing

In fact, investment declines much faster and further than consumption during the downswing. That this was true in the United States in the depressions following 1920 and 1929 is

shown by Chart VI.<sup>7</sup> In 1921 investment (Gross Capital Formation) was 48 per cent below the level of 1920, whereas consumption had fallen only 19 per cent. The same discrepancies were evident after 1929. At current prices, investment in 1932

TABLE 7.—INDEXES OF INVESTMENT, CONSUMPTION, AND MONEY INCOME  
1929-1939<sup>8</sup>

(Current Prices)

1929 = 100

Year	Investment (Gross Capital Formation)	Consumption (Consumers' Outlay)	Money Value of Out- put (Gross National Production)
1929	100	100	100
1930	67	94	88
1931	42	77	69
1932	16	60	50
1933	21	58	50
1934	30	68	60
1935	44	71	65

was 84 per cent below the 1929 level, and even after allowances for the price decrease in these goods the decline amounted to 81 per cent. In this same period consumption declined only 40 per cent. In the boom years, 1927, 1928, and 1929, invest-

<sup>7</sup> The chart is based upon data taken from Simon Kuznets, *National Income and Capital Formation, 1919-1935*, New York, 1937, p. 85. The figures given by Kuznets are for "Gross Capital Formation" and "Consumers' Outlay," but these categories correspond closely to investment and consumption as used in this book. Gross Capital Formation includes the flow of finished producers' durable commodities, residential buildings flowing to final domestic users, net changes in inventories not yet sold to final users, and net changes in claims against foreign countries. The estimate is for gross rather than net capital formation, since no deductions are made for depreciation and obsolescence of durable goods. For further description of the series, see *op. cit.*, p. 37.

Kuznets warns his readers that the annual estimates are subject to a wide margin of error and that the three year moving averages are more reliable.

<sup>8</sup> Indexes derived from data in *ibid.*, p. 85.

ment contributed 21 per cent of the national income, and consumption 79 per cent. But in the depression years 1931, 1932, and 1933 taken as a whole, 90 per cent of the national income

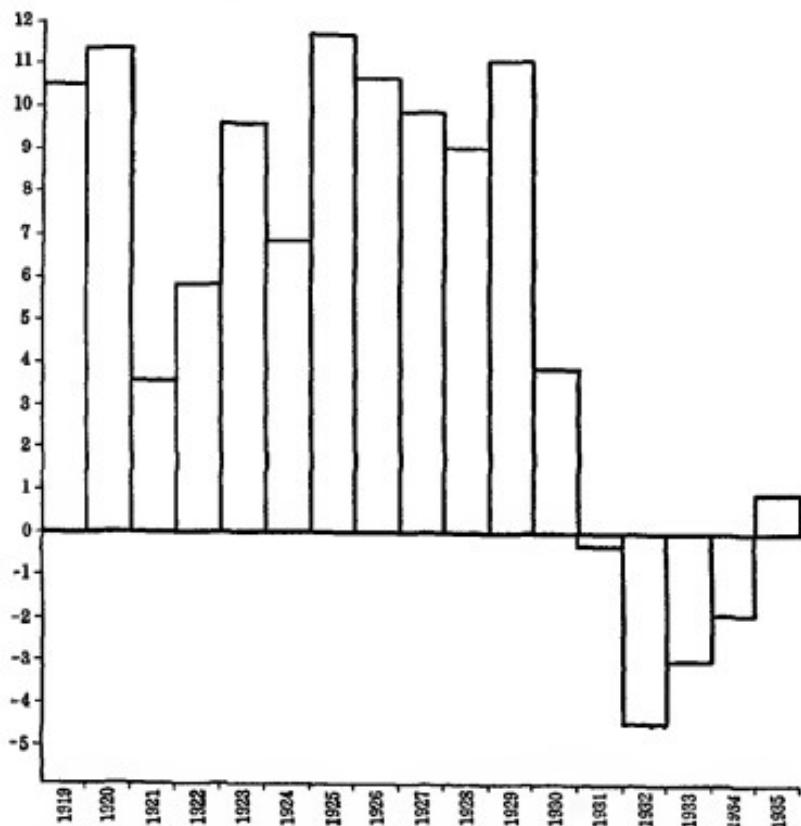


CHART VII.—Net Investment in the United States, 1919-1935, in Billions of Dollars

was contributed by consumption and only 10 per cent by investment.<sup>9</sup> Capital formation became so low during the post-1929 downswing that it did not even cover the depreciation of capital goods in use. This is shown by Chart VII. In the five

<sup>9</sup> cf. *ibid.*, p. 45

prosperity years preceding and including 1929, capital formation exceeded capital consumption by about \$9,500,000,000 a year In 1930 capital formation was still greater than capital consumption, though by only \$3,879,000,000 In each of the following four years, however, capital consumption exceeded capital formation, so that for the six years 1930-1935 as a whole, capital consumption exceeded capital formation by more than \$4,600,000,000

This precipitous decline in investment, which is an invariable characteristic of the cyclical downswing, is traceable to an unfavorable combination of circumstances—declining expectations as to the returns to be realized from the installation of new capital goods, a failure of interest rates to fall as fast as expected returns, and an insufficient flexibility of the supply schedules of capital goods Especially great is the decline of expectations from the level of the preceding prosperity period In prosperity, when demand for output was at a high level and was expected to continue to rise, it was believed that much new equipment could be utilized steadily and intensively In the downswing, when demand for output is no longer increasing but is falling and is expected to continue to fall, and when many enterprisers already possess idle capacity, new capital is expected to be of use only sporadically and after a delay And even if more capital goods could be used currently, many enterprisers would still postpone purchases in order to take advantage of expected lower prices later In prosperity, prices of output were expected to rise faster than operating costs, or at least not to fall In the downswing, prices of output are expected to fall, and to fall faster than operating costs In prosperity, expectations of returns were magnified by overoptimism In the downswing they are diminished by overessimism As a result of these unfavorable conditions, the whole schedule of expected returns from capital improvements is decreased, and many improve-

ments which in prosperity promised net returns promise only net losses in the downswing. This fall of expectations must lead to a decline in the demand for capital goods unless it is accompanied by an equally precipitous drop in market rates of interest. But we have seen that market rates of interest, and particularly long-term rates, do not behave in this way.

The decline in expected returns from capital improvements lessens the demand for investible funds and tends to lower market rates of interest, but the interest rate decline is retarded by the absorption of funds in hoarding and, usually, in a reduction of the money supply. As interest rates fall, more and more people come to feel that the rates offered for investible funds are not sufficient to cover the risk of loss and the cost and inconvenience of administering investment securities. And the risk of loss is likely to be estimated at very high levels, owing to the growing fear of defaults and to the belief that the low level of interest rates is only temporary. These same developments exert pressure on the banks to reduce the money supply by contracting their loans and investments. The tendency toward liquidation may be intensified if the banks expect runs by their depositors, or if they fear a reduction of their reserves by other developments. Such pressures are almost certain to bring about a reduction of the money supply in the absence of a courageous and liberal credit policy on the part of the monetary authority, and they may easily be so strong as to defeat an easy-money policy. Nevertheless, a liberal credit policy is likely at the very least to prevent the contraction from being as great as it would otherwise have been.

The combination of a precipitous decline of expected returns and laggard interest rates brings about a sharp decrease in the demand for durable capital goods. This decrease, in the face of supply schedules of capital goods that are inflexible because of sluggish costs and enterprisers' policies of price maintenance,

serves to lower both the physical amount and the total value of capital goods produced and sold and to shrink the volume of employment and the amount of incomes generated in the capital goods industries.

The decline of investment in durable capital goods is usually augmented by "disinvestment" of enterprisers' inventories of unsold finished and partially finished goods. As the speed of

TABLE 8—NET CHANGES IN BUSINESS INVENTORIES IN  
THE UNITED STATES<sup>10</sup>  
(Millions of Dollars)

Year	At Current Prices	At 1929 Prices
1929	+2414	+2414
1930	-1128	-1131
1931	-1375	-1441
1932	-2461	-3265
1933	-1129	-1790
1934	-1524	-2140
1935	+ 19	- 65

sales drops and as enterprisers come to believe that selling prices will fall, the prosperity level of inventories seems "excessive" and enterprisers proceed to draw them down. It has been estimated that the net reduction of business inventories during the six years following 1929 amounted to \$7,600,000,000 at current prices, or \$9,800,000,000 at 1929 prices. This disinvestment of inventories contributes its share to the fall of employment and money incomes, for it means that enterprisers fail to employ a sufficient quantity of productive factors to replace the finished goods sold.

Such, then, is the pattern of events during the cumulative downswing. An original deficiency of investment relative to savings marks the downturn and lowers money incomes by an

<sup>10</sup> Cf. Kuznets, *National Income and Capital Formation, 1919-1935*, New York, 1937, p. 40.

equivalent amount This initial decline in money income decreases consumption, thereby reducing employment and money incomes in the consumption goods industries But investment declines much more rapidly than consumption, thereby lowering greatly incomes created in the investment goods industries And so it goes, each decline of consumption and investment depresses money incomes, which lowers still further the demand for consumption and especially for investment goods, which decreases still further employment and money incomes This decline must continue so long as investment in each period is less than savings out of the income of the preceding period

The Upturn—If, as was contended in the preceding section, each decline during the downswing unlooses forces making for a further decline, why does the process stop short of universal unemployment? What arrests the contraction and initiates the upturn? These are probably the most difficult questions that business cycle theory must answer

Contraction is arrested and the upturn initiated by anything that causes investment in the period of the upturn to exceed savings out of the income of the preceding period And investment may come to exceed savings either because savings decline without an offsetting decline in investment, or because investment rises without an offsetting rise in savings This does not answer the questions with which we started, however, it merely leads to the question, "What event or combination of events causes the total of consumption and investment to cease falling and to begin to rise?"

✓The impetus for the upturn may emanate from external phenomena—developments not inherent in the cyclical process itself Some of the more pessimistic cycle theorists contend that it is only by powerful phenomena originating outside the cyclical process itself that the downward spiral can be checked and reversed These forces may take several forms A very important

invention or series of inventions may open wide fields for profitable investment despite the prevailing pessimism A war or even a threat of war at home or abroad may bring about extensive government investment in munitions and foodstuffs The government may embark upon an ambitious policy of public investment in buildings, highways, and perhaps less useful undertakings, or it may swell the social income by relief payments financed out of funds that would otherwise have been hoarded or that would not otherwise have been created by the banks Gold discoveries may increase the incomes of the gold-mining industry, swell the money supply, and lower interest rates A recovery of business in other countries may increase the demand for exports A bumper crop at home or crop failures abroad may increase the value of farm exports These and many other such developments may be at least partially responsible for the upturn

It must be recognized, however, that not all the cyclical developments during the downswing are self-exaggerating in character, some tend sooner or later to set the stage for the upturn Perhaps the strongest of these internal forces tending to limit the extent of the downswing is the fact that as the social income becomes progressively smaller an increasing proportion of it is used for consumption and a smaller part is devoted to savings As his income falls, each person is likely to decrease his savings by a greater proportion than he does his consumption Some of those whose current incomes are insufficient for their current needs draw upon their accumulated money balances, or sell investment assets, or borrow to maintain their consumption And the needy who are without assets or borrowing power must be provided with means of consumption by the rest of the community This tendency for consumption to be maintained at the expense of savings helps to bring savings and investment into equilibrium earlier and with incomes

at a higher level than would be possible if savings were kept at a high level in the face of declining investment

As the downswing wears on, there may also develop an increasing need for investment in capital repairs, replacements, and additions. For a time, perhaps for a considerable time, in the earlier stages of the downswing enterprisers do not need to make even extensive repairs and replacements, for capital equipment is usually in good condition at the downturn and is more than sufficient to meet the shrinking demand for output.<sup>11</sup> But time and change take their toll. Machinery and other equipment wear out in use and deteriorate as they are exposed to the elements. The accumulation of inventions, geographical shifts of industry and changes in the types of output demanded render an increasing proportion of old equipment obsolete. As these developments lessen the existing supply of efficient capital equipment, as population continues to increase, and as the rate of decline of the demand for output decreases, the day is hastened when more rapid investment must be made.

Another force making for recovery is the increasingly liquid condition of wealthy persons, industrial and commercial enterprises, investment institutions, and commercial banks. As commercial banks accumulate excess reserves and as other institutions and persons garner large hoards of unused money whose purchasing power has been increased by the fall of prices, the pressure for hoarding and for destroying money tends to be relaxed somewhat and there may arise an increased willingness to lend at low rates of interest. Other possible developments capable of making for business recovery are the fall of costs that occurs as unemployment spreads, a gradual dissipation of pessimism, and a spreading of the belief that prices are near

<sup>11</sup> An exception to this may occur in a downturn following a war prosperity, in which capital of types useful in peacetime may have been allowed to deteriorate.

"rock bottom" so that nothing is to be gained by further postponement of purchases

The Upswing—However difficult it may be to see why the initial upturn occurs, it is easy to understand why the upswing, once it is started, becomes cumulative. The initial excess of investment over savings, which marks the upturn, increases the money income of the community correspondingly. This increases the demand for output, which directly increases income in the form of enterprisers' profits and indirectly, by making remunerative a larger output than before, leads to greater employment and higher incomes of the factors of production. Thus, during the upswing each expansion unlooses forces making for further expansions in both the consumption and the investment goods industries.

Each expansion of money income augments consumption, especially when the rise of income is accompanied by a more and more optimistic view as to the future of employment and incomes, and this brings about further growth of incomes created in the consumption goods industries. But much faster is the rise of investment. Just as a large part of the cumulative decline of money incomes in the downswing is traceable directly and indirectly to the abrupt fall in the rate of investment, a large part of the cumulative rise of money incomes in the upswing is traceable to the rapid advance of the rate of investment. Not only does the enhancement of investment account for the higher money income created in the investment goods industries, but through its Multiplier Effect it makes possible much of the increase in consumption and in the money incomes created in the consumption goods industries.

The rapid advance of investment in the upswing is traceable to a favorable combination of circumstances—growing expectations as to the returns to be realized from capital improvements, a failure of interest rates to rise as rapidly as expectations, and

the slowness of the decrease in the supply schedules of capital goods. The rise of expectations from the depression level is likely to be very great, and for several reasons. As was noted earlier, much of the capital equipment at the end of a depression is likely to be obsolete relative to the improved types available, or poorly adapted to the types of output currently demanded, or badly in need of repair. In some lines, and especially in construction, accumulated needs may be large. When, therefore, demand for output ceases to fall and begins a rise that is expected to continue, enterprisers believe that they will be able to use large quantities of additional capital goods steadily and intensively. And the fear that the prices of these goods will go up leads some to anticipate future needs. Expected returns are also increased by the belief that prices of output will no longer fall, but will climb, and climb faster than operating costs. And all anticipations are colored and magnified by the replacement of pessimism by optimism, and perhaps later by overoptimism. As a group the enterprisers in each industry tend to overestimate the increase in demand that they will enjoy, and each enterpriser is prone to overestimate the share of the heightened demand that will accrue to him. All these developments cooperate to increase expectations, which, in turn, must enlarge the demand for capital goods unless it is offset by a proportional rise of interest rates. And interest rates rise but slowly.

The expansion of expected returns from capital increases the demand for investible funds and tends to raise interest rates, but the rise of these rates is retarded by the supplementing of current savings with funds dishoarded and newly created by the banks. As interest rates go up and especially as greater confidence reduces fears of losses on securities, wealthy persons, financial institutions, and even industrial and commercial corporations which had accumulated large hoards during the down-

swing make these available for investment Likewise, the commercial banks utilize their accumulated excess reserves as a basis for expanding loans and investments, and when they have expanded to the limit permitted by their reserves they are likely to beg the central bank for additional funds with which to increase still further their lending power, though the central bank may refuse to accommodate them The outpouring of investible funds from hoards and from newly created money is a powerful factor in retarding the rise of interest rates in the earlier stages of the upswing, and it sometimes persists into the crisis

The combination of higher and higher expected returns from capital goods and a delayed and slow rise of interest rates increases greatly the demand for durable capital goods This larger demand is likely to be accompanied by only gradual decreases in the supply schedule of capital goods, partly because of the slowness of the rise of costs—particularly in the earlier stages of the upswing when unemployment and excess capacity are still widespread—and partly because many enterprisers possessing some degree of monopoly power raise their prices but slowly and allow the greater demand to be manifested largely in expanded output As demand schedules increase much faster than supply schedules decrease, both the physical amount and the total value of capital goods produced and sold rise This rise of investment increases money income in the capital goods industries, which paves the way for yet further increases in money demand and income

The rise of investment in durable capital is usually supplemented by additional investment in enterprisers' inventories of finished and partially finished goods As selling prices cease to fall and promise to go up and as the speed of sales is accelerated, enterprisers feel that their inventories are "deficient" and proceed to build them up This addition to inventories helps to

expand money incomes, for it means that enterprisers must employ more than enough productive factors to replace the finished goods sold.

Thus the pattern of events during the cumulative upswing is roughly the reverse of that during the downswing. An original excess of investment relative to savings increases money income and sets into operation a self-reinforcing upswing of demand, money income, and employment.

**The Downturn** —The cumulative upswing can be brought to an end and reversed, as was indicated earlier, by anything that causes investment in a period to be deficient relative to savings out of the income of the preceding period. This condition can be brought about by an increase in savings not offset by an increase in investment, or by a decrease in investment not offset by a decrease in savings. There are numerous types of developments that are capable, either individually or in conjunction, of bringing about such an initial discrepancy, and it seems probable that different ones of these have been operative at different downturns in the past.

The initial pressure for the downturn may be traceable, at least in part, to the behavior of expectations concerning the returns to be realized from new capital improvements. Though we saw earlier that one of the most striking characteristics of the upswing is an improvement in these expectations, there are many forces—forces generated by the process of use itself as well as by external phenomena—that may sooner or later terminate and even reverse this trend. In the first place, as time wears on more and more of the most lucrative uses of capital are exploited. During the upswing investment rises at a faster rate than consumption, owing both to the higher proportions of incomes saved as total income rises and to the use of dishoardings and of newly created money to purchase new investment goods. Deficits in building and machinery accumulated

in the preceding downswing are gradually met through repairs and replacements, and the most profitable of the accumulated inventions are put into use It is to be emphasized that there remain many ways in which newly produced capital goods can be employed productively, repairs and replacements are needed to cover current depreciation and obsolescence, additional capital goods are needed to supply current increases in the demand for finished output—though the rate of increase in production diminishes as capacity levels of output are approached, and it is indeed a rare industry that could not use more capitalistic methods of production to yield some return The only point to be made here is that the advance of expected returns may after a time be retarded, stopped, or possibly reversed by the fact that the cream of investment opportunities tends to be skimmed off first

Another development tending to retard and even to reverse the growth of expectations in the later stages of prosperity is the rise of operating costs per unit of output Though costs are almost certain to lag behind selling prices in the earlier phase of the upswing, it may well happen at a later stage when unemployment has largely disappeared that costs per unit of output will tend to catch up with prices This is due largely to the higher wages and rates of pay to labor and other productive factors, but it may be aggravated by a decrease in the efficiency of labor—including the labor of management—which is generated by the prevailing feeling of economic security

The use of expectations may also be checked and perhaps even reversed by the disappointment of earlier anticipations If earlier predictions are shown by subsequent events to have been overly optimistic, current views are likely to be revised accordingly Expectations are obviously subject to injury by shocks emanating from the loss of foreign markets, serious labor disturbances, fear of higher taxes, actual or threatened invasion

by an enemy, a collapse of speculation in real estate or securities markets, and so on

As the upswing proceeds, therefore, various pressures tend at the very least to slow down the rate of rising expectations and may even bring about a decline in it. Though such an injury to expectations would not lead to a reduction in the demand for investment goods if interest rates adjusted themselves properly, we have already discovered that interest rates cannot be relied upon to act so benevolently. In fact, there are developments within the upswing—particularly in its later stages—which are capable of accelerating the rise of interest rates to such an extent as to reduce the demand for investment goods even in the absence of deteriorating expectations. These forces tending to accelerate the advance of interest rates operate through the demand for money to hold and through the money supply.

It has already been noted that at least until the later stages of the upswing the supply of investible funds is supplemented and the rise of interest rates retarded by dishoardings and by the creation and lending of new money by the banks. If this process should be stopped—and especially if it should be reversed so that savings not only ceased to be supplemented but also were actually absorbed in part—it would accelerate the advance of interest rates and serve to lower the demand for investment goods. And this may easily happen. As money incomes, trade, and prices climb, income receivers and traders are likely both to consider it desirable to hold larger money balances for trade purposes and to utilize a part of savings in this way. The absorption of savings through the building up of money balances to facilitate trade in commodities and services is likely to be slow and gradual, however. More abrupt and unpredictable is hoarding by “bears”—institutions and persons who believe that prices of securities and other investment assets

are going to decline. This may occur either during a boom of these prices or after they have begun to fall. As prices of investment assets rise, and especially as they reach levels unjustified by any reasonable long-run considerations, less optimistic members of the community are likely to refrain from buying and may even sell some of the assets already in their possession in order to accumulate money balances with which to buy in later at the expected lower prices. Hoarding by "bears" is likely to be even more extensive after the collapse of a speculative boom, for as earlier optimistic forecasts are proved false and many people suffer serious losses, a large part of the community is prone to expect still further price declines to follow.

This increased demand for money balance to hold—either to carry on trade in commodities and services or to build up "bear" balances—must, in the absence of a sufficient increase in the quantity of money, be supplied out of savings, thereby restricting the volume of funds available for investment.

The flow of funds into investment may also be restricted by a cessation of the increase or by an actual decrease in the money supply. Even if the amounts of their reserve balances remain intact or grow for a time, banks finally reach the limit of their expansion possibilities when the use of their deposits has lowered the reserve-deposit ratio to its legal or customary minimum. This arresting of the extension of bank credit may be hastened and may even be transformed into a decline if the banking system suffers a loss of reserves. And there are several developments capable of bringing about such a reserve drain. Bank reserves may be drawn down by a domestic drain of cash into circulation. This is likely to happen as the rise of pay rolls and of the value of retail trade increases the demands of income receivers and merchants for hand-to-hand cash. The lowering of reserves may be traceable to gold exports, which are brought about by an excess of commodity and service imports.

over exports or by capital exports Or reserves may be reduced by a deliberate restrictive policy on the part of the monetary authority, which may embark upon such a policy for any one or more of several reasons—to protect its reserve position, to arrest what appears to be an excessive boom of production and commodity prices, or to check speculative activity in the securities markets It is the opinion of many that the restrictive policy initiated by the Federal Reserve System in 1928-1929 for the purpose of arresting security speculation was a potent factor in bringing about the succeeding downturn of business

Some students of business cycles believe that these variations in hoarding and dishoarding and in the rate of change of the money supply are the principal reasons for the crisis or downturn They point out that in the earlier stages of the upswing current savings are greatly augmented by rapid dishoardings and by sizable increases in the money supply, so that the rise of interest rates is retarded and both the demand for and the prices of investment goods are greatly enhanced But dishoarding and money creation cannot continue forever at such a rapid rate When, therefore, dishoarding slows down and ceases or perhaps turns into hoarding, and money creation slows down or ceases or perhaps develops into money destruction, the rise of interest rates is so accelerated as to reduce the demand for investment goods and to initiate a decline in investment There is no doubt that such a process is capable of ending an upswing, and that it will sooner or later terminate upswings not halted earlier by other developments It must be remembered, however, that the downturn may also be initiated by a deterioration of expectations and may occur despite a willingness of the banks to expand their credit and of money holders to dishoard—but at rates of interest too high relative to the lowered expectations

Such, then, are some of the developments most likely to terminate the upswing and to initiate a cumulative downswing, whose characteristics we have already analyzed

## CHAPTER VIII

### OBJECTIVES OF MONETARY POLICY

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#### INTRODUCTION

In the first paragraphs of this book money was described as one of the great labor-saving devices invented and developed for the purpose of enhancing—though indirectly, to be sure—the real income and material welfare of mankind. Yet in the course of our examination of the interrelationships of money, prices, trade, and production, it has become more and more painfully evident that in actual operation money does not always perform its functions faithfully. Refusing to remain in the role of passive but useful slave, it often revolts to become an evil master, imposing arbitrary and frequently undesirable redistributions of wealth and income among the various classes of the community as well as depressing the volume of real income produced far below the level of which the economic system is capable if operated at full capacity. Though peoples have always displayed an almost incredible patience with defective monetary systems, at least partly because of an underestimation of the disturbing influence of money, they are now demanding in increasing numbers that the power of money be directed to desirable rather than undesirable ends. But how would an ideal money behave? What should be the ultimate objective of monetary policy?

#### ULTIMATE OBJECTIVE OF MONETARY POLICY

This should be to facilitate, in so far as it can, the attainment of the purposes of the economic system—to produce and

distribute equitably among the members of society the maximum volume of the most useful types of goods and services at the lowest possible social cost This is not to say that monetary policy alone is capable of achieving all these ends, it is no panacea for all economic ills Certainly even under the most successful monetary policy serious economic problems would still remain—problems involving the inequitable distribution of wealth and income, inadequate total production, disproportion among types of things produced, unwise consumption habits, and so on Money should, however, expedite rather than hinder the attainment of our economic objectives At the very least money should be neutral, it should neither originate disturbances nor respond in such a perverse way as to aggravate and prolong disturbances originating in nonmonetary phenomena At its best it might be so managed as to ameliorate to some degree mal-adjustments originating elsewhere in the economic system As yet, however, no monetary system has met even the minimum requirement

#### IMMEDIATE CRITERIA OF MONETARY POLICY

Though the success of a monetary system must in the last analysis be judged on the basis of its contribution to the attainment and maintenance of full, efficient, and stable employment and of an equitable distribution of wealth and income, it is clear that this ultimate goal is too distant to serve as a practical guide to monetary policy We must have more immediate criteria, or intermediate guideposts, to show us the way to the ultimate objective Many such guides have been proposed, most of them warn us away from some dangerous shoals and some take us partway to the ultimate objective But which of these is most trustworthy?

**Stabilization of the Monetary Unit in Terms of a Commodity**—The immediate objective of monetary policy that has probably enjoyed the widest acceptance and use in modern

times, though its popularity is waning, has been the stabilization of the monetary unit in terms of some one commodity, or in some cases of two commodities. These commodities have usually been gold or silver, or both. Under a gold standard the value of each unit of every kind of money in use is kept equal to the value of a stipulated amount of gold. Under the silver standard the monetary unit is stabilized in terms of silver. And under bimetallism money is stabilized in terms of both metals. To accomplish this end, the quantity of money issued must be limited sufficiently to prevent its depreciation in terms of the standard money metal and yet it must not be so restricted as to cause it to appreciate in terms of the metal.

It is evident that stability of a money in terms of gold (or silver) is not of especial importance in and of itself, a case can be made for this immediate objective only if it can be shown that it induces money to behave in such a way as to facilitate trade. Many advocates of the gold standard insist that it does just this; it facilitates trade, both internationally and domestically. It is supposed to facilitate international economic transactions by stabilizing exchange rates between moneys. When monetary units are kept constant in terms of gold, the exchange rate between them is relatively fixed and can vary only by an amount measuring the costs of transporting gold from one country to the other. And this stability of exchange rates encourages the international flow of commodities and capital funds by eliminating the risks and uncertainties that would attend fluctuations in exchange rates. We must remember, however, that stability of exchange rates is assured only so long as all the moneys involved are fixed in terms of gold, a money that is kept constant in these terms is still free to fluctuate in terms of paper and silver-standard moneys. This argument for stabilizing a nation's monetary unit in terms of gold is valid, therefore, only if other commercially important nations are

also operating under a gold standard, it cannot be used to support the maintenance of a gold standard by one country alone

Advocates of a gold standard frequently argue that stabilization of money in terms of gold also tends to facilitate domestic trade, and that it does this by militating against "excessively" inflationary and deflationary monetary policies To prevent their moneys from depreciating in terms of gold, countries must refrain from "excessive" expansions of the money supply And to prevent them from appreciating in terms of gold they must refrain from "excessive" restrictions of the money supply Even if it is admitted that the keeping of money constant in terms of gold prevents errant monetary authorities and commercial bankers from indulging in the grossest excesses of inflation and deflation, no one can reasonably contend that such a policy points the way to anything like an ideal behavior of money Experience has demonstrated many times that a money that is stable in terms of gold can still undergo wide fluctuations in purchasing power and can fail to behave in the manner most conducive to the attainment and maintenance of full employment

At its very best, therefore, the immediate objective of stabilizing the monetary unit in terms of gold is inadequate, though it may prevent money from behaving in some undesirable ways, it does not indicate precisely the way that money should behave To supply more specific guidance some other immediate objective is necessary Recognizing this fact, more and more of the countries maintaining a gold standard have also attempted to manage their moneys in such a way as to secure a greater stability of prices, or of business activity, or of some other objective that is more conducive to full and stable employment than is the mere stabilization of money in terms of gold This raises a series of important questions Is it possible to maintain

money constant in terms of gold and at the same time to manage it in the way most likely to achieve and maintain economic equilibrium, or does the one preclude the other or at least make more difficult its achievement? And if the stabilization of money in terms of gold (or some other one commodity) does militate against the attainment of other monetary objectives, should not the attempt to stabilize money in terms of gold be abandoned?

**Stabilization of the Price Level**—A criterion of monetary policy that has enjoyed considerable support is the stabilization of the price level. This policy has been urged by a sizable group of economists, bills which sought to impose upon the Federal Reserve System a legal obligation to employ all its powers to this end have been introduced and advocated repeatedly, though unsuccessfully, in Congress, and in 1933 President Roosevelt stated as the monetary objective of his administration that "When we have restored the price level, we shall seek to establish and maintain a dollar that will not change its purchasing and debt paying power within the succeeding generation."

Actual experience appears, at least at first sight, to lend support to the contention that price stabilization is the appropriate criterion of monetary policy. Periods of falling prices, and particularly of rapidly falling prices, have virtually always been periods of economic stagnation as well as of arbitrary shifts in wealth and income. Periods of rising prices, though not cursed by a contemporary production decline, have also witnessed sizable shifts in the distribution of wealth and income and have usually been followed by business breakdowns. Only periods of relatively stable prices have been able to combine an active and stable prosperity with a largely neutral effect on distribution. The easy deduction from experience, therefore, is that a policy aimed at stabilizing prices is likely to be most effective.

in achieving the ultimate objectives of money. Unfortunately, this criterion must be rejected as inadequate and in some cases as actually misleading. Before criticizing it further, however, we must recognize its merits. These are two. In the first place, it directs attention to the evils of gratuitous fluctuations in prices. And in the second place, it would in a large proportion of cases indicate the proper general type of monetary policy to be followed. The monetary authority would rarely go wrong in following a liberal money policy in the face of falling prices or a restrictive policy in the face of rising prices. Criteria used in the past have apparently not given even this amount of guidance. Despite its merits, however, price stabilization cannot be accepted as either an unerring or a sufficiently helpful guide.

There are three principal criticisms of this criterion. The first finds fault with the vagueness of the advocates of price-level stabilization rather than with the criterion itself if properly defined. What price level should be stabilized? Retail prices? Wholesale prices? The cost of living? Wages? Security prices? A composite index including the prices of everything sold for money, such as the  $P$  of the transactions type of quantity theory? When the science of index numbers was in its infancy and less was known about the behavior of prices, it was usually assumed that all types of index numbers that were at all comprehensive would behave in about the same way regardless of their inclusiveness and weighting. Now it is known that various types behave quite differently, so that the monetary policy counseled might vary considerably according to whether one or another type of index was chosen as a guide. This point was noted by a member of the Federal Reserve Board in 1928 in opposing a bill ordering the Federal Reserve System to stabilize the price level. "For example, in the period from 1925 to 1927 the Bureau of Labor wholesale indexes show a price decline of about 12 per cent, but if you take the curve of the cost of

living, the decline was barely 2 per cent. If you take a composite index like Mr. Snyder's there was hardly any decline at all."<sup>1</sup> It is even possible to find periods in which some price indexes rose while others declined. As indicated at the beginning of this paragraph, however, this criticism is more properly levied against the vagueness of the proponents of price stabilization than against the criterion itself and does not apply when the price index to be stabilized is carefully defined. Several recent writers have met this objection by urging that the average prices of the current output of finished goods be stabilized, for it is with reference to these prices relative to costs of production that enterprisers decide upon the volume and types of output to be undertaken, and it is these things for which money incomes are largely, though not in their entirety, spent.

But even after the criterion has been defined clearly it is still subject to criticisms. The second one grows out of the fact that price level fluctuations are in their first appearance a symptom rather than a cause of economic instability and as a symptom may appear clearly enough to be recognized and to indicate the need for action only after the disease of which it is a manifestation has already made considerable headway. The "cause" or "causes" behind the initial rise or fall of the price level of output is, of course, an expansion or contraction of money demand relative to the physical quantity of finished output offered for sale. Most of the economists advocating price stabilization have recognized this fact but have dismissed it as of little importance, this they do because of their belief that the symptom, price changes, will appear almost simultaneously with its underlying causes and will thereby sound the signal for action before serious damage is done. Such a belief rests upon the assumption that perfect or near-perfect competition rules in most industries and that prices are highly sensitive

<sup>1</sup> Statement of Mr. Hamlin in hearings on H.R. 11806 (1928), p. 393.

to underlying changes Under these assumed conditions it would undoubtedly be true that shifts in money demand for output would be almost immediately manifested in price changes and that the volume of production would be affected only later and as a consequence of price changes.<sup>2</sup> As indicated earlier, however, the economic systems of the western world are to a considerable extent systems of insensitive prices and sensitive production The growth in size of the individual firm, the rise of the trade association, cartelization, the use of policies of price leadership, legalization of price maintenance, government price fixing—all these and other influences as well have contributed to the inflexibility of prices and have probably increased the extent to which fluctuations in money demand are manifested in production and employment rather than in prices

It was partly because of a belief that the price level gives its counsel too late to permit the use of preventive measures and at the most can only point the way to remedial action that the Federal Reserve rejected price stabilization as the criterion of credit policy As the Federal Reserve Board stated in 1923, "Credit administration must be cognizant of what is under way or in process in the movement of business before it is registered in the price index The price index records an accomplished fact "<sup>3</sup>

The third criticism of price stabilization as a criterion of monetary policy is that it does not differentiate between disequilibrating and equilibrating changes in the price level of output Those advancing this criticism do not defend all price fluctuations, they readily admit that some—even most—of the price fluctuations that have occurred in the past have been

<sup>2</sup> Under conditions of perfect competition each enterpriser would assume that he could sell an unlimited amount of his product at the market price, and a shift in the demand for his product would necessarily take the form of a change in the market price

<sup>3</sup> Annual Report of the Federal Reserve Board, 1923, p. 32

disturbing influences and ought to have been prevented In this category they include all variations in the prices of output that are traceable to expansions and contractions of the money supply, to hoarding and dishoarding of money, and to fluctuations in the physical volume of trade owing to changes in the aggregate supply of available factors of production—the increase of the working population, the opening of new land, and the accumulation of capital They emphasize, however, that price changes attributable to changes in the real efficiency of production are in a different category Price changes paralleling changes in real costs of production are not incompatible with the maintenance of normal profit margins and of full and stable employment, rather, they must be allowed to occur if disequilibrium is to be avoided We shall deal here only with increases in the efficiency of production, for it is this case that is significant in a progressive economy

Increases in the real efficiency of production may be effected in many ways, among these are new inventions, a wider use of inventions already in existence, better techniques of business organization and management, a greater vigor and intelligence of workers and managers, and an improvement in labor relations that reduces cannery and sabotage But whatever its cause, any expansion of the average output per productive factor must, in the absence of a proportional rise in the average money reward to productive factors, lower the money cost per unit of output This can be shown by a hypothetical example Suppose that in the original situation 100 units of productive factors produce 100 units of output per period and receive in return \$90, so that the average cost of production per unit of output is 90¢ This output is sold at an average price of \$1, so that the enterprisers' profit margin is 10¢ per unit This situation is then altered by a 10-per-cent rise in the real efficiency of production, so that the same aggregate of productive factors

can produce 110 units per period. If the aggregate money reward to the productive factors remains unchanged, the money cost per unit will fall to 82¢ ( $90/110 = 82$ ), so that the selling price per unit could fall to 92¢ without shrinking the enterprisers' 10¢ margin. In fact, if the price of output is maintained at \$1 and the average rate of pay to productive factors does not rise, enterprisers' profits will be inflated to 18¢ per unit. Thus, enterprisers' profit margins can be abnormally widened just as surely by maintaining selling prices constant in the face of declining costs as they can by raising selling prices while costs lag behind. And in both cases the resulting business boom must collapse when, as will happen sooner or later, profit margins are again narrowed by the rise of cost levels relative to selling prices.<sup>4</sup> It is evident that this criticism of price stabilization would not apply if productive factors received money rates of pay that always varied directly with their productivity. Such a behavior of cost levels cannot be depended upon in our economy, however.

Several economists who believe that the behavior of prices furnishes the most useful criterion of monetary policy but who admit the validity of the first and third—particularly the third—of the above criticisms of price stabilization have recently advocated that money be so managed as to cause the price level of output to vary only in response to changes in the efficiency of production. If this were done successfully, price levels of output would vary directly with real costs. This criterion is

<sup>4</sup> The same conclusion is arrived at by another line of reasoning. Some analysts point out that selling prices can be buoyed up in the face of increased efficiency only by an excess of investment over savings, which involves an abnormal stimulation of the investment goods industries. When the injection of new money to maintain prices is stopped or even slackened significantly, investment is discouraged, which may well bring about a recession not only in the investment goods industries but elsewhere as well. For a good brief discussion of this problem see E. F. M. Durbin's treatment on pp. 261-268 of G. D. H. Cole's *What Everybody Wants to Know About Money*, New York, 1934.

superior, theoretically if not administratively, to that of price stabilization. Yet despite its superiority it, too, is subject to the second criticism advanced above against price stabilization—that price changes are a symptom rather than a fundamental cause, and that as a symptom they are likely to appear too late to prescribe preventive action and perhaps too late to call forth effective remedial action. Since prices are but symptoms and since it is the magnitude of the money demand for output that is of fundamental importance, it would seem desirable to use not prices but the behavior of the money demand for output as the criterion of monetary policy. The immediate criterion should be the establishment and maintenance of that volume of money demand for output that will come nearest to securing full and steady employment. However, before discussing this criterion further it is necessary to examine other intermediate guides which have been suggested and which, though they are neither adequate nor trustworthy, do call attention to disturbances to be avoided.

**Stabilization of the Quantity of Money**—A criterion that has sometimes been suggested, though it has never enjoyed more than a small sponsorship among economists, is that of stabilizing the quantity of money. According to this proposal, the immediate goal of monetary policy should be to hold constant the aggregate quantity of money, including both cash and circulating bank deposits. It requires no detailed analysis to discover that this criterion is not the proper one to adopt. A constant supply of money would not by any means insure a properly behaving money demand for output. This money demand would still fluctuate because of hoarding and dishoarding, and it would be highly unlikely to expand enough to take off the market at remunerative prices the increased output made possible by the growing supply of labor and other productive

factors<sup>5</sup> The appropriate monetary policy demands not a constant quantity of money, but a quantity of money that varies in the way most conducive to attaining the desired behavior of the money demand for output

Though it is unacceptable as a guide to monetary policy, this criterion does focus attention upon the evil effects of inappropriate fluctuations in the money supply. In fact, it appears to have originated as a protest against the arbitrary and capricious expansions and shrinkages of money which too often have been responsible for initiating disturbances and for aggravating and prolonging disturbances that originated elsewhere in the economy. Its positive contribution is to condemn all variations in the money supply that cannot be shown to be conducive to the attainment of continuous full employment.

**Stabilization of Total Money Expenditures (MV)** —A third criterion of monetary policy that has been suggested is stabilization of the rate of money expenditures for all goods, services, and securities—the MV of the equation of exchange. This criterion is also stated as "stabilization of the effective supply of money." As an objective it is superior to that of stabilizing the quantity of money alone, for it recognizes that the volume of money expenditures is influenced by fluctuations in the velocity as well as in the quantity of money. Nevertheless, it is too inexact to be acceptable. To stabilize money expenditures for everything entering into T—services and all types of goods and securities, both new and second-hand—does not by any means insure a proper behavior of the money demand for new

<sup>5</sup> The same conclusion is arrived at regardless of the type of monetary theory used for purposes of analysis. In terms of the transactions type of quantity theory, a constant  $M$  in the face of fluctuations in either  $V$  or  $T$ , or both, would permit  $P$  to fluctuate. According to the cash balance approach, a constant money supply in the face of a fluctuating demand for money would allow the value of money to fluctuate. The commodity theory arrives at the same conclusion through an analysis of the supply and demand for gold.

output In fact, the stabilization of MV would almost certainly be accompanied by fluctuations in the money demand for new goods and services If this criterion were adopted in an economy expanding in population and capital supply, the long-term increase in trade between the different stages of the productive process and in second-hand securities, real estate, and other goods would absorb progressively larger amounts of expenditures and would leave progressively smaller amounts to be spent for current output Over longer periods, then, a constant MV—even if it could be maintained—would probably be accompanied by a declining demand for new output And during shorter periods, increases and decreases in expenditures for these other elements of trade would leave alternately smaller and larger amounts to be spent for current output<sup>6</sup>

*Stabilization of the Money Demand for the Current Output of Finished Goods and Services*—One who accepts the view expressed above, that the money demand for finished output occupies a key position in the economic process, is likely to conclude that the monetary policy most conducive to the attainment of continuous full employment is that aimed at stabilizing the money demand for the current output of finished goods and services This would probably be the most satisfactory policy for a static economy with a stable productive capacity A constant money demand for a constant quantity of real finished output would, if cost levels remained properly adjusted, permit the maintenance of enterprisers' profits and give them no incentive to reduce their scope of operations Incidentally, it would also maintain a stable price level for finished output

A policy of stabilizing the total money demand for finished output would also be the most satisfactory one to be followed in an economy in which productive capacity was expanding,

<sup>6</sup>Cf p 73

if this expansion of output were imputable solely to an enhancement of the real efficiency of production, that is, to an increase in the average output per unit of productive factors. This again assumes that there is no advance in the average money cost per unit of productive factors. In this case, as in that of the static economy, the maintenance of a stable aggregate money demand for finished output while aggregate money costs remained constant would permit the maintenance of enterprisers' profits. It would, of course, necessitate a decline in the price level of finished output, but this decline in selling prices would be offset by that of money costs per unit so that no deflation of enterprisers' net returns would be effected.<sup>7</sup>

*Increase in the Money Demand for Output in Proportion to the Supply of Productive Factors Stabilization of the Average Money Income Per Unit of Productive Factors*—Although stabilization of the total money demand for finished output is probably the most satisfactory monetary policy when productive capacity remains constant or even when productive capacity is increasing as a consequence of advances in the real efficiency of production, it is too ascetic for use when capacity for output is expanding as a result of accretions to the supply of productive factors. The maintenance of a constant money demand for finished output in the face of a rising supply of productive agents in the form of labor, land, and capital is liable to be deflationary and to retard the absorption of these additional productive facilities into the economic process. With a fixed level of money receipts for finished output, which would be the case if the money demand for output remained constant, enterprisers could not raise the aggregate of their cost payments without suffering a shrinkage of their profits. And the employment of additional agents of production would entail an increase in aggregate money costs if the average money reward to productive factors

<sup>7</sup> Cf p 192

failed to decline in inverse proportion to the increase in their supply In a perfectly competitive, frictionless economy it might be feasible to rely upon such a decline of money costs to maintain enterprisers' profits and to make remunerative the employment of additional productive agents But in an economy characterized by sluggish costs, this policy is not feasible

In an economic system in which rates of pay to productive factors can be reduced but slowly, the money demand for finished output should be expanded at a rate equal to the rate of increase in the supply of productive factors so that entrepreneurs could absorb all the available factors of production, pay them a constant average rate of money reward per unit, and still maintain their profits In other words, the money demand for finished output should be raised at such a rate as to insure the maintenance of a stable average money income per unit of productive factors In terms of the income type of quantity theory, this would require an increase of  $MX$ , the total of money expenditure for finished output<sup>8</sup> In terms of the income and expenditure theory, it would necessitate an excess of investment over savings, which could be effected by dishoarding, or by an increase in the money supply, or by some combination of the two If this criterion of stabilizing the average money income per unit of productive factors were adopted, the price level of output would be permitted to decline in response to advances in the real efficiency of production but not for any other reason

The adoption of this criterion and even the realization of its immediate objectives would not, it must be emphasized, insure the attainment and maintenance of full and stable employment This coveted state could still fail to be attained owing to obstacles of a nonmonetary character Such a policy would, however, do everything that can reasonably be demanded of money,

<sup>8</sup> Cf. p. 72

it would prevent money from originating disturbances and from responding in such perverse ways as to aggravate and prolong disturbances originating in other sections of the economy Even the best monetary system conceivable would be unable to effect unaided all of the various types of adjustments that are continually required in a dynamic economic system and that too often are thwarted by the activities of private or public groups

#### METHODS OF SECURING THE PROPER BEHAVIOR OF MONEY DEMAND FOR OUTPUT

Though the primary purpose of this chapter was to examine the objectives of monetary policy and to discover how money should behave, it seems desirable to outline briefly some of the problems involved in selecting and developing methods to be used in the attainment of these objectives How is the proper behavior of the money demand for output to be achieved? By purely monetary measures? If so, by what types of monetary measures? By nonmonetary measures, and if so by what types? Or should both monetary and nonmonetary measures be employed?

**Monetary Measures for Controlling the Money Demand for Output**—It is evident that control of the money supply is a necessary, though perhaps not a sufficient, condition for the attainment and maintenance of a properly behaving money demand for output The necessity for at least some government regulation of the money supply has long been admitted even by those most vehemently opposed to government intervention in other economic matters Many economists doubt, however, that government and central bank officials will ever be able to exercise the necessary degree of control so long as the money supply depends to such a great extent upon the lending and investing operations of commercial banks There can be no question as to the ability of these officials to limit an expansion

of the money supply within the present banking structure if they proceed intelligently and courageously, by increasing the reserve requirements of commercial banks and by curtailing the available volume of reserves they can force the banking system to limit its creation of money. They can also be practically certain that in periods of optimism the banking system will not permit excess reserves to accumulate and that it will expand its credit on the basis of any increase in reserves or any decrease in reserve requirements that they see fit to allow. But they are likely to be less successful in preventing a decrease or in inducing an increase in the money supply in periods in which expectations are unfavorable. At such times a growth of bank reserves or a lowering of the reserve requirements of banks makes possible but does not force an expansion of bank credit. As one writer has put it, though a balloon cannot rise if its moonng rope is not slackened, a slackening of the rope will not push up a balloon that is heavier than air. And, unfortunately, it is at the very time that these unfavorable circumstances exist that the monetary authorities should increase the money supply to offset, to some extent at least, current hoarding.

For these reasons many economists have come to believe that an appropriate monetary policy cannot be expected from commercial banks operating under the types of laws and management now existing. In the first place, they note that existing reserve laws—which fix reserve requirements solely upon the basis of the volume of deposits and without reference to velocity—would not indicate to bankers the proper policy to be followed even if the primary interest of these officials were in securing an appropnate behavior of the money supply. And in the second place, bankers are pmarily interested not in their effect on the money supply but rather in the other of their dual functions—lending and investing. There are several rea-

sons for this Many bankers do not understand their ability to alter the money supply, it is still common for them to insist that they do not manufacture money but "merely accept deposits and lend out the proceeds" Moreover, and this is probably a more powerful factor in diverting bankers' attention from their influence on the money supply, the larger part of bank earnings is derived from loans and investments, and the purpose of a bank, from the point of view of its owners, is to make profits

To some critics these flaws in the commercial banking system appear so fundamental as to demand a basic reform The proposal for sweeping bank reform that has been most widely discussed in recent years is that which would establish "100% banking"<sup>9</sup> In the interest of a more accurate control of the money supply the advocates of this reform propose that the present functions of the commercial banks be divided among three bodies a central monetary authority, a system of checking banks, and a system of lending and investing institutions The central monetary authority, which would be a non-profit, governmental body, would possess the sole power to issue and withdraw money The checking banks would exist only for the purpose of clearing checks, of transferring the ownership of deposits from payor to payee, and of maintaining free interconvertibility of cash and deposits, they would have to maintain with the central monetary authority reserves equal to 100 per cent of their deposits, and they would not be permitted to make loans and investments or in any other way to influence the quantity of money The lending and investing institutions would not be permitted to issue money, their function would be to gather the voluntary savings of the community and to facilitate

<sup>9</sup> Though plans of this type were formulated independently and at about the same time by several people, the clearest exposition of the structure and rationale of the proposed system is that of Irving Fisher in his book, *100% Banking*, New York, 1935

their flow into investment And the amount that they could lend would be limited to the amount of voluntary savings that they could gather

It is not possible to evaluate here the merits of the proposal for "100% banking" The suggested plan was introduced at this point only to indicate the nature and extent of the structural changes in banking that many economists believe necessary before the quantity of money can be subjected to continuous and accurate control

Even assuming, however, that the quantity of money is by some means brought under continuous and accurate control, we are still faced with a fundamental question Would it be feasible to control the money demand for finished output solely by controlling the quantity of money? As has been stated several times, the money demand for finished output can vary not only because of fluctuations in the money supply, but also because of hoarding and dishoarding, or, as the income type of quantity theory would put it, because of variations in the circuit velocity of money If the money supply were brought under control and prevented from aggravating business fluctuations, the variations in circuit velocity would probably be narrowed considerably, though they would certainly continue to exist Would it be feasible to counteract such dishoardings and hoardings as still persisted by shrinking and expanding the money supply? It seems probable that the monetary authority could, by contracting the quantity of money, prevent dishoarding from raising consumption and investment above the desired level On the other hand, less success could be expected from attempts to offset hoarding by an expansion of the quantity of money, this is particularly true after expectations have deteriorated At such times the newly created money is likely to be saved, especially if it is put into the hands of persons or institutions that will not use it for consumption, and drained

off into hoards instead of flowing into investment. This is because, when enterprisers' expectations of profits are unfavorable, a rate of interest that is low enough to make profitable the volume of investment required to raise the community's money income to the desired level is likely to be so low that members of the community will not make their investible funds available for use.<sup>10</sup> The hoardability of money under present laws permits the withholding of investible funds from the market and prevents interest rates from declining far enough to raise investment to the level required for full employment.

To some economists the remedy for this situation is evident. If the free hoardability of money is responsible for maintaining interest rates too high and for depressing money demand for output, it should be ended; hoarding should be made so expensive that holders of money will either spend it for consumption or make it available for investment at whatever rates of interest it can obtain.<sup>11</sup> This, they contend, should be done by taxing the holding of money. The tax imposed should increase with the length of time that money is held, and money held more than a stated period of time might even be confiscated. In this way the socially harmful bargaining advantage granted to money hoarders by existing monetary laws would be removed; people would be forced to make all their savings available at interest rates as low as were necessary to clear the market—perhaps even at negative rates of interest in periods

<sup>10</sup> Cf. p. 154.

<sup>11</sup> Though it is hazardous to allocate authorship of economic ideas, the proposal to make hoarding of money expensive seems to have originated with Silvio Gesell. A complete account of his views is presented in his book, *The Natural Economic Order*, San Antonio, 1930. The proposal was available in German as early as 1906, however. A short exposition and analysis of Gesell's plan is given by H. T. N. Gantskell in G. D. H. Cole's *What Everybody Wants To Know About Money*, New York, 1934, pp. 311-324. A well reasoned and brilliantly written book presenting a proposal of this type is Arthur Dahlberg's *When Capital Goes On Strike*, New York, 1938.

of depressed demand for investible funds, and the rate of spending would be prevented from falling

No judgment as to the feasibility of employing taxation to control the velocity of money is possible at this time. A thorough theoretical analysis of the plan is still lacking, and past experiments with it have covered such small areas and such short periods of time as to make them inconclusive.

**Nonmonetary Measures for Controlling the Money Demand for Output**—We do not yet know with what degree of success purely monetary measures can be used to control the money demand for output. Monetary authorities have not utilized the various instruments that they now possess with sufficient courage and energy to indicate how effective these can be, and we can only guess at the probable effectiveness of the new instruments of control that might be added to their equipment. It is, however, virtually certain that monetary authorities armed only with their present weapons will fail to achieve the desired degree of control if they must combat antagonistic economic policies of a nonmonetary character. They cannot reasonably be expected to control the aggregate of consumption and investment if governmental agencies speed up their investment in prosperity periods and reduce their demand for savings during depressions, if existing policy encourages or even countenances excessive speculation in the securities markets, with its effects on expectations, consumption habits, and security issues, if monopoly power exists and selling prices are kept so inflexible that shifts in demand exert most of their effects on the volume of production and employment, if wages and other costs are determined without due attention to their effects on enterprisers' profits and the amount of employment, if taxation is made to bear most heavily upon enterprise during depressed periods, and if international commercial policies shut off markets at the very time that they are needed most. Purely mone-

tary measures cannot reasonably be expected to achieve their objectives if they must continually combat such unfriendly economic policies. Economists are coming to believe more and more that the economic problems of instability and under-employment can be solved only if they are attacked simultaneously on all fronts by a number of coordinated and mutually reinforcing measures. An appropriate monetary policy must be included as an essential part of this integrated program.

## SELECTED SUPPLEMENTARY READINGS

### CHAPTER I MONEY AND THE ECONOMIC PROCESS

#### A The Functions of Money

Helfferich, Karl *Money* London, 1927, Part II, Chapters I-III  
Jevons, W S *Money and the Mechanism of Exchange* New York, 1883, Chapters I-IX

#### B Measurement of Price Level Changes Index Numbers

Fisher, Irving *The Purchasing Power of Money* New York, 1926, Chapters IX and X and Appendix to Chapter X

A good brief and understandable discussion of the use of index numbers and some of the problems involved in their construction

— *The Making of Index Numbers* Boston and New York, 1923

An advanced and exhaustive treatment of the subject

King, W I *Index Numbers Elucidated* New York, 1930

A good discussion of the construction, use, and interpretation of index numbers

#### C Consequences of Changes in the Value of Money

Keynes, J M *Monetary Reform* New York, 1924, Chapter I

### CHAPTER II THE TRANSACTIONS TYPE OF QUANTITY THEORY GENERAL PRINCIPLES

#### A Early Statement of the Quantity Theory

Hume, David *Essays, Literary, Moral, and Political* London, Essay XXV, "of Money"

Especially interesting in this essay is Hume's description of the effect of changes in the money supply on business activity

### B Modern Statement of the Quantity Theory

Fisher, Irving *The Purchasing Power of Money* New York, 1926 (first published in 1911)

This is the best-known and most fully developed presentation of the transactions type of quantity theory. The reader should remember, however, that when this book was first published (1911) economists were still concerned primarily with long-run or normal, rather than with short-run or transitional, effects. Monetary theorists today are more interested in what Fisher calls "transition periods."

### C General Evaluations of the Quantity Theory

Anderson, B M *The Value of Money* New York, 1917

This sharp criticism of the quantity theory in general and of Fisher's *Purchasing Power of Money* in particular contains some brilliant analysis as well as much that is mistaken and unjustified.

Keynes, J M *The General Theory of Employment, Interest, and Money* New York, 1936 For relevant sections of this book, consult its index.

Marget, Arthur W *The Theory of Prices* New York, 1938, Volume I

Discussions and evaluations of the quantity theory occur in many sections of this volume.

### D Factors Bearing on the Money Supply

#### 1 GENERAL DETERMINANTS OF THE MONEY SUPPLY

Cf relevant sections of Fisher and Anderson as cited above

Currie, L B *The Supply and Control of Money in the United States* Cambridge, 1934

#### 2 COMMERCIAL BANKS AND THE MONEY SUPPLY

Crick, W F "The Genesis of Bank Deposits," *Economica*, June, 1927

Phillips, C A *Bank Credit* New York, 1926, Chapters I-III

### E The Velocity of Money

Cf relevant sections of Fisher, Anderson, and Marget as cited above

Ellis, H S "Some Fundamentals in the Theory of Velocity," *Quarterly Journal of Economics*, May, 1938, pp 431-472

This article performs a valuable service in describing the process by which velocity changes

Wicksell, Knut *Interest and Prices* New York, 1936, Chapter VI

## CHAPTER III THE TRANSACTIONS TYPE OF QUANTITY THEORY APPLICATIONS

### A Case Studies in Which the Transactions Type of Quantity Theory Is Used to Analyze the Behavior of Prices

Bresciani-Turroni, Constantino *The Economics of Inflation* London, 1937

A careful and detailed analysis of the German inflation, 1914-1923

Graham, F D *Exchange, Prices and Production in Hyper-Inflation Germany, 1920-1923* Princeton, 1930

An excellent analysis of this period

Kemmerer, E W *Money* New York, 1935, Chapters X-XIII

This book contains good short accounts of the inflations in France (1789-1796), England (1797-1821), the United States (1861-1865), and Germany (1914-1923) It also contains bibliographies on these inflations.

### B The Dispersion of Prices

Fisher, I *The Purchasing Power of Money* New York, 1926, Chapter IX

Means, G C *Industrial Prices and their Relative Inflexibility* Washington, 1935

Mills, F C *Prices in Recession and Recovery* New York, 1936.

- Tucker, R S "The Reasons for Price Rigidity," *American Economic Review*, March, 1938

#### CHAPTER IV THE CASH-BALANCE TYPE OF QUANTITY THEORY

##### A Statements of the Cash-balance Type of Quantity Theory

Kcynes, J M *Monetary Reform* New York, 1924, pp 81-95  
 ——— *A Treatise on Money* New York, 1930, Volume I,  
 pp 222-233

Marshall, A *Money, Credit, and Commerce* London, 1923,  
 Book I, Chapter IV

Pigou, A C "The Value of Money," *The Quarterly Journal  
 of Economics*, Volume XXXII, November, 1917, pp 38-65

Robertson, D H *Money* New York, 1929, pp 30-43, 195

##### B Evaluation of the Cash-balance Type of Quantity Theory

Marget, A W *The Theory of Prices* New York, 1938, Volume  
 I, Chapters XV-XVI

#### CHAPTER V COMMODITY THEORIES OF MONEY

##### A Presentations of Commodity Theories of Money

Laughlin, J L *The Principles of Money* New York, 1903, Chapter  
 IX

Laughlin contends that the value of gold depends on  
 the supply of and demand for gold relative to the sup-  
 ply of and demand for other commodities

Mill, J S *Principles of Political Economy* London, 1885  
 Book II, Chapters VIII and IX

In these chapters Mill presents and reconciles the  
 quantity theory and the cost-of-production theory of  
 the value of money

Warren, G F, and Pearson, F A *Gold and Prices* New York,  
 1935

This theory of the relations between gold and prices is  
 supposed by many to have been the basis of the Roosevelt  
 gold policies of 1933-1934

### B Evaluations and Criticisms of Commodity Theories of Money

Hardy, C O Is There Enough Gold? Washington, 1936

The first part of this book is a study of the supply of and demand for gold. The second is an evaluation of the Warren-Pearson price theory.

Heilperin, M A International Monetary Economics New York and London, 1939, Chapters II-IV

In this excellent short discussion Heilperin criticizes Cassel's analysis of the so-called "gold problem" and questions the fruitfulness of employing the "supply of and demand for gold" analysis when dealing with a monetary system in which only a small part—if any—of the actual circulating medium is composed of gold.

### C Studies of Prices Stated in Terms of the Demand for and the Supply of Gold

Cassel, G The Theory of Social Economy New York, 1924, Chapter XI

An attempt, recently much criticized, to estimate the rate of increase of the gold supply that would be required to prevent a downward trend of prices.

Royal Institute of International Affairs The International Gold Problem London, 1931

A collection of papers on the functions of gold, the production and consumption of gold, and the proper behavior of gold.

### D Devaluation of Gold Moneys as a Means of Raising Prices

Gilbert, M Currency Depreciation and Monetary Policy Philadelphia, 1939

Hardy, C O Devaluation of the Dollar Chicago, 1933 (a pamphlet)

Harris, S E Exchange Depreciation Cambridge, 1936

## CHAPTER VI THE INCOME AND EXPENDITURE APPROACH GENERAL PRINCIPLES

### A The Controversy Between the Classical Economists and the Dissenters on the Question of the Sufficiency of Purchasing Power

Martin, P. W. *The Problem of Maintaining Purchasing Power*  
London, 1931, Chapters I and II

This is an excellent short discussion of the controversy  
References to members of both sides are given in the  
footnotes This book merits much more attention from  
economists than it has received

Say, J. B. *A Treatise on Political Economy*, fourth American  
edition Philadelphia, 1830, Book I, Chapter XV

This is probably the most widely known statement of  
the classical belief as to the sufficiency of purchasing  
power

### B The Meaning of Money Income

Kuznets, S. *National Income and Capital Formation, 1919-1935*  
New York, 1937, pp. 1-39

### C Types of Income and Expenditure Theories

Several forms of the income and expenditure theory  
have been advanced in recent years Though these have  
much in common—in most cases much more than their  
authors would admit at first—they have also differed  
somewhat in terminology, logical framework, causal  
imputations, and emphasis As a result, there has ac-  
cumulated in a relatively short period an extremely  
large body of literature, much of it controversial Reference  
will be made here to only a few of the most  
important of these writings The theories will be di-  
vided into classes and readings suggested for each  
class

**1 THE EARLY KEYNES ANALYSIS, 1930-1935**

Keynes, J M *A Treatise on Money* New York, 1930, 2 volumes

This is the basic presentation of Keynes's ideas on money at this stage. The fundamentals of the theory are to be found in Volume I, Book III.

Hansen, A H *Full Recovery or Stagnation?* New York, 1938, pp. 331-343

Hansen here calls attention to an error in Keynes's fundamental equations, discusses methods of correcting the error, and evaluates the equations as they would stand after correction.

**2 THE LATER KEYNES ANALYSIS, 1936-**

Hansen, A H *Full Recovery or Stagnation?* New York, 1938, Chapter I

An appraisal of Keynes's later analysis. This material first appeared in the *Journal of Political Economy*, October, 1936.

Keynes, J M *The General Theory of Employment, Interest, and Money* New York, 1936

In this book Keynes presents an analysis which differs somewhat from that in his *Treatise on Money*, though—as he points out—it represents an evolution of his thought rather than a change of his views.

Lerner, A P "Mr Keynes's General Theory of Employment, Interest and Money," *International Labor Review*, Volume XXXIV, 1936, pp. 435-454

This is a brief, though far from easy, exposition of the essential ideas contained in Keynes's book.

Robinson, Joan *Introduction to the Theory of Employment* New York, 1937

This is a brief and somewhat popularized exposition of the Keynesian analysis.

Discussion and criticism of Keynes's later analysis are voluminous, since early 1936 there has been hardly an issue of any of the so-called learned economic journals that has not contained at least one article or note on this subject. Full agreement

among the writers has not yet been reached, but the present state of the controversy is indicated in the following articles Lutz, F A "The Outcome of the Saving-Investment Discussion," *The Quarterly Journal of Economics*, August, 1938, pp 588-614

And a series of articles and notes on saving and investment by A P Lerner, Oscar Lange, Myra Curtis, and F A Lutz in *The Quarterly Journal of Economics*, August, 1939, pp 611-631

### 3 HAWTREY'S ANALYSIS

Hawtrey, R G *Currency and Credit* New York and London, 1930, Chapters I-IV

— *The Art of Central Banking* New York and London, 1932, Chapter III

— *Capital and Employment* New York and London, 1937, Chapters I-VI

Hawtrey presented the basic elements of his theory in the first book listed, but the later books include important additions and elaborations

### 4 ROBERTSON'S ANALYSIS

Robertson, D H *Money* New York, 1929, Chapter V and p 197

— *Banking Policy and the Price Level* London, 1932

— "Saving and Hoarding," *The Economic Journal*, September, 1933, pp 399-413

## CHAPTER VII THE INCOME AND EXPENDITURE APPROACH AND THE BUSINESS CYCLE

This subject is treated in the works of Hawtrey, Keynes, and Robertson as cited under Chapter VI

Haberler, G *Prosperity and Depression* Geneva, 1939, Chapter II and Part II

Chapter II of this book describes the purely monetary theory of the business cycle as presented by Hawtrey. Part II is Haberler's own synthetic theory stated in

monetary terms but taking into consideration non-monetary phenomena

Harrod, R F *The Trade Cycle* Oxford, 1936

A theory of the business cycle that is similar to the analysis of Keynes's *The General Theory of Employment, Interest, and Money*

## CHAPTER VIII OBJECTIVES OF MONETARY POLICY

Durbin, E F M *The Problem of Credit Policy* London, 1935  
An excellent discussion and comparison of the various goals of monetary policy

Gayer, A D *Monetary Policy and Economic Stabilization*, second edition New York, 1937  
An enlightening discussion of the objectives of economic and monetary policies and an appraisal of the various means that have been proposed for attaining these objectives

Royal Institute of International Affairs *The Future of Monetary Policy* London, 1935  
A provocative discussion of the objectives of monetary policy and the means of attaining them, with considerable emphasis on the international aspects of the problem

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